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A post-binary strategy

The nearest thing we have to a concise but overarching higher education policy is the binary structure elaborated during the 1960s and 1970s. This policy has not only established - frozen some would say - the political and administrative framework for universities, polytechnics and colleges, but also powerfully and eloquently expresses a clear view of the role(s) of higher education. At times even it may have told us uncomfortably too much about the things we value, and devalue, on both sides of the binary frontier. Everything else that passes for policy is not really policy at all - the creation of the National Advisory Body, the selective strategy of the University Grants Committee, the twists and turns of policy on overseas students, all are merely adjustments to fluctuating levels of resources within the basic binary framework.

The binary policy now needs to be changed - not because it was wrong but because it has failed, not because it has succeeded too well. Its replacement must be firmly post-binary not pre-binary. It must make it possible to pursue the original binary objectives of Anthony Crosland, which are really the objectives that must be pursued in any semi-mass system of higher education, with renewed vigour and on a broader front (ie incorporating the universities). So a post-binary policy must reflect the ends of the original binary policy not the particular means adopted in the late 1960s to implement these ends.

The first move must be to break down the present over-rigid dichotomy between universities and other institutions, and to move towards a position in which all senior institutions are regarded as belonging to a common, but heterogeneous group. Not only is this shift in emphasis necessary for the straightforward reason that it is a more accurate description of what is already a more diverse system than many people suppose (and the binary division is only one aspect of that diversity and not always the most significant one), but also because it is only in this way that the universities can be brought to share in at least some of the objectives of the binary policy. It is only by breaking down the binary structure - a little that the universities can be nudged in this more democratic direction and the original binary objectives can stop being labelled second-class.

In Britain we have a particularly restrictive view of the university, partly because of the weight of misunderstood tradition, partly because of the failure to achieve a breakthrough to a more mass system, and partly because the binary structure which encourages the universities to take a limited view of their role. The best approach therefore is to combine the necessary shift towards seeing higher education as a comprehensive collection of heterogeneous institutions rather than as divided into two binary camps, with a move towards a much more liberal view of the activities in which it is appropriate for universities to engage.

In practice this means creating a much extended "university" sector which will take in the existing universities, the polytechnics and the colleges, and some of the larger colleges and institutes of higher education (perhaps after another round of mergers with other CIEs, perhaps by being incorporated into federal institutions headed by universities or polytechnics). About 100 major institutions would be established which could be called "universities", although some might prefer to retain "polytechnic" as a qualifying adjective - just as some technological universities have kept the phrase "polytechnic" in their titles. This would not be a "back to bina-

but on more flexible terms than today's categorical binary structure. The second difference would be that an individual "university" would not have to receive all its income from a single source, whether the UGC grant or the advanced further education pool. Indeed it would work against the spirit of diversity if institutions in the autonomous, local authority, and direct-grant segments of the expanded "university" system received their funds by quite separate and mutually exclusive routes. Instead there should be a move towards mixed funding under which a local authority "university" would be eligible to receive UGC money for specific purposes or an autonomous "university" to receive a subsidy from a local authority. The Department of Education and Science or another department, the UGC, the NAB, or any other agency would be able to make much greater use of specific grants.

Mixed funding would have two advantages. It would allow reader and more effective intervention to produce the quick results desired by a funding agency, and it would blur the distinction between the three segments of the new "university" system. Mixed funding would also encourage institutions to be genuinely comprehensive: dependence on a single source of income tends to force an institution into a homogeneous mould.

The third difference would be that not all "universities" would necessarily award their own degrees or other qualifications, not in any subject. Within a highly differentiated system the issue of quality assumes greater prominence. Even in the autonomous universities some more formal system of accreditation might become essential simply to retain some academic order in an increasingly heterodox environment. Within other "universities" which enjoy traditionally close relationships with clients whether in industry or the professions, the exclusive right of the institution to award degrees might not be appropriate.

Finally among the newly promoted "universities" there would be institutions at very different stages of academic development. For all these reasons a spectrum of strategies to maintain quality would be essential, ranging from the loosest form of accreditation (from which even the most established universities might benefit) through "partnership" validation and external validation to externally set examinations and independently awarded qualifications.

Such a radical break with the binary past may strike many as far-fetched even if they regard it as desirable. Yet the drift towards institutional diversity of which this would be the culmination is already plain. A polytechnic in Ulster, merger talks in Aberdeen show that the binary orthodoxy may be beginning to crack.

The automatic assumption that university status leads to material advantage and greater autonomy will be increasingly questioned as the UGC's selective strategy remorselessly renews the system. The work of the NAB is certain to modify the balance between central and local government, and between institutions and local authority. The Council for National Academic Awards is moving cautiously towards the liberal reform of its validation procedures. There are many other examples of cracks in the binary policy. The growth of a new "university" system with much more diverse patterns of external control, internal government, income sources, and far-fetched. There will be the possibility to say: "The binary policy is dead. Long live the binary policy!"

Laurie Taylor



It is the most extremely pleasant of my duties here today to produce a great big thank you to a lot of Professor Lepping for his most interesting paper. In my own country as some of you will know we have a saying "Inspirationally vinedel punitum" that is, "no man stands on the head of another to look forward to the better" and that is so much what is happening here today. We are hearing many things from Professor Lepping. Some stimulating, some enlightening, and several which are useful. I myself am especially liking what is being said about language and social class because in my own country we are fortunate in that we are having no social class at all for a very long time. Now the hour has come for some questions. May we have some hand-raising. And please - first your names.

Doctor Orlansio - Facultat d Student d Physicoatologie. Ah, Doctor Orlansio. Do let me have Professor Lepping's question for him.

I am hearing very good all the most excellent things you are saying Professor Lepping. You have some congratulations. But there is a strangeness in what you say. You will excuse me Professor Lepping, if I speak in a most provocative way?

Oh yes, certainly. Please do. Thank you. Then I have to say that there is a strangeness here. Something that would not go in my own country. Something that I am thinking is not good. Let me speak with considerable insolence.

Errm: ... please do. Thank you. Well, what is this you are saying about the children being in the country? I do not know of this in my own country. It is not a good thing. It is not, Professor Lepping, and I am now talking with great rudeness - it is not a natural thing - this sexual control.

I am thinking you Doctor Orlansio. A most evoking question which certainly will make many of us start thinking for the first time. Now, Professor Lepping. How do you speak? Thank you. Thank you, Mr. Chairman. Yes, I think there may be some slight confusion here. As I understand it your reference would appear to be to the working class group - that is, sub-sample B - who were given the language practice with the English Code. Now the reference to the "enhanced" phrase for indicating experimental phrase for indicating the sexual variable had been taken into account by allocating a number of working class boys and girls to the "enhanced" language group and the "enhanced" language group.

Are you now getting some satisfaction, Doctor Orlansio? I have to insist to you Doctor Chairman, that we do not do it that way in my own country. It is not a good thing this sexual control. And I speak with a lot of impudence. Good. Well, it is seeming to me, Professor Lepping, that time has past and we will have to be a disagree. May I say once again a great big thank you to a lot of Professor Lepping. I am now talking with great rudeness - it is not a natural thing - this sexual control.

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Deadlock over PCL rectorship

by Felicity Jones

The Inner London Education Authority may send in its own management team to run the Polytechnic of Central London to resolve the co-ordinating deadlock over the appointment of a new rector.

Leading members of ILEA's Labour group favour this strategy following the failure of the authority and PCL governors to reach agreement. But the move would be viewed with suspicion by the majority of the polytechnic's governors who fear a plot to delay the appointment until after the ILEA advanced further education review, when possible mergers will be discussed.

The management team would consist of one or two polytechnic directors from the other four inner London polytechnics, and a senior administrator who would run PCL until an appointment was made.

Another option, which is not necessarily excluded by the management team proposal, is to re-advertise the post. This is popular with the academic staff and is being favoured by the ILEA leadership following a similar "cooling-off" period. Mr. Bale Gannagras, deputy chairman of the further and higher education committee, said: "Some people certainly think that it would be better to leave things to settle down and to advertise again in due course."

He thought that there was little prospect of a management team being sent in. It was agreed following a meeting between the authority and the court of governors that the joint advisory committee should be reconvened as soon as possible after Easter to discuss the alternatives.

The difficulty still stems from the fact that the governors favour the acting rector Professor Terence Burin, but a long history of antagonism, which goes back to the days of Sir Ashley Bramall's leadership, has sat ILEA squarely against his appointment.

ILEA officers would prefer to see Professor Burin in the post to preserve continuity and give the polytechnic a period of peace. They are aware of growing disenchantment.

Mr. Neil Fletcher, ILEA's further and higher education committee chairman, expressed reservations in a letter to the court about confirming Professor Burin as acting rector until the summer of next year with the possibility of an actor-designate in post at the same time.

He wrote that the timing of a re-advertisement needed careful consideration and urgent thought needed to be given to "interim arrangements" including progress on the rest of the senior management structure, which has been under revision.

He admitted that while further consideration might be given to the authority's procedures for vetting appointments it would be falling in its duty if it did not give careful thought to the approval of Professor Burin.

Ministers call engineering summit

by Jon Turney
Science Correspondent

An engineering education summit jointly convened by the Secretaries of State for Industry and Education and Science, Mr Patrick Jenkin and Sir Keith Joseph, will be held before the end of the month.

A similar high-level summit last year gave rise to the Government's initiative on information technology. The aim this time is to give new impetus to the Engineering Council which was established 16 months ago following the Finniston report on engineering.

The meeting will be attended by Sir Edward Parkes, chairman of the University Grants Committee, Mr Christopher Ball, chairman of the board of the National Advisory Body, Professor John Kingman, chairman of the Science and Engineering Research Council, and Sir Kenneth Corfield, chairman of the Engineering Council.

The secretaries of state will be pressing the four bodies invited to co-ordinate their influence on engineering courses. They will want to hear the Engineering Council's plans for starting up the "engine of change" in the field, now that plans for transfer of course registration from the Council of Engineering Institutions have gone through.

The Engineering Council, for its part, sees the meeting as "an occasion for the council to press key areas" for departmental attention, according to the director-general, Dr Kenneth Miller.

The Department of Industry is particularly concerned about future needs for specialized skills, and education officials are considering a possible switch of resources into "conversion courses".

Last year's engineering meeting was an important stage in the genesis of the DES information technology initiative, which relies heavily on short postgraduate conversion courses to help new graduates enter careers in expanding industrial sectors.

Development of this type of initiative would take the balance of expenditure between different disciplines in higher education. One Engineering Council member said this week that it was part of the council's role to "help stiffen ministers' resolve" in the face of protests about loss of autonomy, especially from universities.

Other items on the agenda will include the respective responsibilities of the council, UGC and the Council for National Academic Awards for registration of courses, and the Engineering Council's plans to promote engineering careers through the school curriculum.

Council members are anxious to impress the importance of this on the DES, and to stress the influence of university entrance requirements on recruitment of engineers.

Sir Keith wrote to Sir Kenneth Corfield in December following the publication of the Engineering Council's policy statement, underlining the urgency of reaching decisions on the most appropriate form of academic training for engineers. He said the process of bringing industry and education together for such a debate could not begin too early.

His emphasis, then, was on the need to produce sufficient technicians to allow an unhampered emergence from the recession, and to check the spread of extended degree courses. Four-year courses should be available only in response to clearly identified needs of industry, he said.



Bids for jobs topped 2,000

by Ngalo Crequer

Some 2,250 applications were made by the universities for the "new blood" and information technology posts, whose allocation was announced this week.

Of the 242 "new blood" posts, most are in the physical sciences (66), with engineering next (48) and then medicine (43). Biological sciences was allocated 25, mathematics 20, social studies 17, arts 15 and agriculture and veterinary studies 8. There were 70 information technology posts.

The new posts are designed to promote research and boost areas where otherwise there would be little recruitment. In addition to the details revealed in last week's *THE TIMES*, Brunel got two "new blood" posts (engineering, mathematics) and one IT, Exeter two "new bloods" (mathematics and social sciences), Kent one (physics) and three ITs, Lancaster one in physics, Leicester five (three in physics, medicine and social sciences, one in social science) and one IT, Warwick five (two each in mathematics and physics, and engineering) and two and a half ITs.

In Wales, Bangor got one "new blood" post in physics, Cardiff one in mathematics, the School of Medicine one in medicine, and the Institute of Science and Technology one in social sciences and one IT.

One university, St David's, Lampeter failed to get any post at all. A spokesman said: "We put in a bid for one of each. Under 'new blood' we recognized we had not been badly hit by the cuts, so we continued on page 2"

Ulster statutes promise protection for staff

by Karen Gold

Draft statutes for Ulster's polytechnic which go before the merger steering group today contain a traditional clause giving staff far more protection than is thought to be acceptable to the present government.

The clause uses the "good cause" formula considered a strong, if not watertight, protection against redundancy for economic reasons alone; no full-time employee of the university can be removed from office, membership or employment without "good cause" - defined as failure to perform duties through incapacity or neglect, or serious misconduct.

Although the statute containing it is to be redrafted before going to the Privy Council, these sections will not be affected according to a spokesman for the Northern Ireland Department of Education. The redrafting will only cover an individual's powers of defence if accused of conduct leading to dismissal, and is expected to be only a minor change.

But the Privy Council has already gone on record in letters to the Institute of Education, London, and the University College of Wales, Aberystwyth, saying that university applications for new or revised charters and statutes should include a clause allowing for the possibility of staff redundancy for financial reasons.

The final drafts of the Ulster charter and statutes are unlikely to be approved by the steering group and go to the Privy Council until the summer - by which time steering group members, DENI and senior staff all hope another university will

have forced the Privy Council's hand. DENI and the steering group have little choice but to use the standard clause since at the announcement of the merger of the New University and Ulster Polytechnic staff were promised they would not be worse off in pay and conditions.

The rest of the statutes are largely conventional, but do include an unusual clause specifically inserted to prevent academic drift; a guarantee of a regular review by a committee appointed by the council but comprising two-thirds outsiders, meeting not less than every seven years, "to examine how far the university is fulfilling the objectives in its charter".

Council will be slightly smaller than usual, with 36 members, while court is proposed to include more representatives from both sides of industry and has fewer "local worthies" in their place.

The steering group will also interview candidates today for the second tier management posts in the new institution - provost, chancellors, provosts, secretaries and treasurers - with a second set of interviews next week and appointments likely to be announced next month.

• The Northern Ireland review body for higher education will have an extra Ulster member, raising the province's representation from two to three out of eight. Mr Nicholas Scott, minister responsible for Northern Ireland Education has announced.

DES veto delays postgrad course

by Patricia Santinelli

The Department of Education and Science is delaying the transfer and validation of West Sussex Institute of Higher Education's postgraduate education course in what appears to be the first exercise of its powers of approval over teaching training courses.

The first intimation that these powers of veto or approval which are vested in the Secretary of State for Education, but up to now seldom used, would be put into effect, emerged last month.

Sir Keith Joseph, announcing the launch of the White Paper *Teaching Quality*, said that courses which did not conform to certain newly laid down criteria would not receive approval.

Now the department has apparently used this to delay transfer of the Postgraduate Certificate of Education, which has been running successfully at the Institute's Bishop Otter College since 1968, from validation by the University of Sussex to the Council of National Academic Awards, on the grounds that it is not satisfied with changes made in the course.

It has also asked the CNA not to grant final approval to the course which had been initially approved, provided some changes were made, following a visit to the college.

Both the council and the college are now convinced that this represents the first move by the department into course approval on the lines of the White Paper.

The DES claims that this is merely a routine exercise - although approval of transfer is usually a formality - and that has nothing to do with the White Paper, but that the course needs to have certain elements strengthened.

It points out that it had never granted approval for transfer, not having received a reply to its queries about the course, and that the college should not have gone ahead and sought CNA validation.

The college on the other hand says that it had answered the department's questions at length. When it received no reply it assumed that transfer had been approved, and that the usual stereotypical letter was on its way.

It has now written to the department expanding on its original answer. This explains that the inclusion of a secondary teaching strength in history and mathematics in education course, which all PGCE students have to take, is not a back-door method of training teachers in these areas.

In both cases this was meant to give students greater breadth, and the mathematics in education course was also intended to teach prospective teachers methods by which they could improve the numeracy of their pupils.

Design policy row brewing

Government departments appear to be heading for a clash over the Government's moved policy of promoting design education in Britain.

The Department of Industry has been pumping money into a series of curriculum development projects in design as well as promoting industrial awareness of design, while the Department of Education and Science is poised to reduce art and design courses as part of its higher education cuts policy.

The DoI has so far given £15,000 to the Council for National Academic Awards to investigate ways of introducing design management into more polytechnic and college courses, and another £15,000 to the London Business School's design management unit to expand its range of design teaching.

The department has also given £90,000 over three years via the Design Council for a series of curriculum development projects. A committee under Mr Brian Overy, secretary of the CNA, has approved 12 projects from some 65 applications. Details will be released shortly.

The two departments have each given £10,000 to fund a newspaper for secondary schools called *Design*. The DoI is also putting money via the Design Council directly into universities to promote specialized design research.

The Government has repeatedly stressed its strong belief that good design is fundamental to the business of successful manufacture. This week a further £7m has been allocated to its successful "Design for Profit" initiative within industry.

Meanwhile a National Advisory Body working group, under Dr Patrick Nutgens, director of Leeds Polytechnic, is currently reviewing art and design courses, often existing in run, in polytechnics and colleges. Some could well close.

SSRC gets its man

The Social Science Research Council has won its tug-of-war with the Prime Minister's Office over the services of Sir Frank Cooper. The former head of the Ministry of Defence will serve on the council for three years until July 1986, replacing another former MoD head, Sir James Dunnett. The confirmation has been delayed several months because Mrs Thatcher wanted Sir Frank to do "more important work" for her.



The 28th Sunday Times National Student Drama Festival has been held over the last week at Bretton Hall College, Wakefield. Besides 16 new student productions, there have been workshops held by professional writers, actors and directors. Here Clive Stubbs, from the University of East Anglia's Minerva Theatre Company, is seen with the production of Trevor Griffiths' *Comedians* with Jimmy Jewel and Susannah York.

Unions in clash on contracts campaign

by David Jobbins

Rival trade unions this week stepped up their campaigns in support of contract research staff in the universities.

The Association of University Teachers, concerned about the effects of the cuts and the recession on the security of research staff, launched a survey of conditions at Manchester University in preparation for a national conference later this month.

The Association of Technical, Managerial and Supervisory Staffs drew up detailed proposals for the immediate introduction of a permanent career structure for researchers.

The AUT has consistently opposed the idea of a permanent structure, arguing that academics should mix research and teaching. It has developed a short-term strategy seeking permanent academic posts for staff who have been employed on short-term contracts for six years or more, but has never been able to agree on the longer term.

On April 28 a London conference will examine the problems and will set in train the process of replacing the union's present ad hoc advisory committee on researchers by a permanent representative national committee. Under the proposals, to be presented to the union's national council in May, researchers will for the first time have within the AUT democratic procedures for identifying issues and determining how they should be tackled.

Ma Clare Short, the director of Youthaid, said: "Trade unionists hold the key to the success of this new strategy. YTS will not succeed unless large employers become involved and with them come trade unions. They are in a position to impose conditions on the scheme to ensure that the young unemployed are not exploited and used to threaten other people's jobs."

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New blood bids

continued from front page

were modest in our proposal. But we are disappointed about information technology. We are very interested in this area and wrote to the Science and Engineering Research Council in February about a scheme for studentships and we have not had a response."

Mr John Akker, deputy general secretary of the Association of University Teachers, said the number of posts was derisory and he would be raising the issue of distribution with MPs and others whereby some technological and small universities had done badly.

The AUT has asked the Equal Opportunities Commission whether it would support a test case against the ruling that appointments should go to people 35 or under. Mr Akker said he had received hundreds of letters from people complaining that the age limit would deter women from returning to the profession.

One common complaint however has been that the University Grants Committee ignored the priority given to the bids by the universities. Some vice chancellors are privately astonished that some universities got the posts they did. They would have urged even greater selectivity.

Mr Brian Salter, senior research officer at Surrey University and chairman of the AUT national advisory group on research staff, said universities were being forced to use research as cheap labour.

"Effectively, Government is seeking to buy time professionals using short-term contracts as its primary means of economic control," he says in an article in the latest issue of the *Higher Education Review*.

Figures in the article show the proportion of contract researchers within academic ranks has increased from 18 per cent in 1975/76 to 21 per cent by 1979/80.

Many of the problems are well known, but solutions are likely to be elusive. A survey at Bristol University found that 62 per cent of staff responding had one year or less of their contract to run. Although more than half were on their first contract, 34 per cent were on their second or third, and 9 per cent had had four or more. In some departments, 70 per cent of contract staff had some teaching involvement. The survey found that 60 per cent had been asked to sign away their right to redundancy pay.

The ASTMS has consistently argued for a permanent career structure. Its proposals for implementing it involve a radical change in the way funds are drawn from the research councils and other bodies. The union says that applications for support would include an identified element for salaries and overheads.

It estimates that £6m could purchase "close to 400 person years" or 400,000 person hours per year, allowing existing staff to be released for research work or additional contract staff to be engaged. Institutions receiving research funds would be expected to report on their use and, in return, would be guaranteed a set period of support.

The paper reassures colleges and polytechnics that the minimum level of general funding, which will be agreed as part of the 1984/85 planning exercise, will not be breached as a result of the proposed policy. It suggests that all public sector institutions be eligible for research support, but criteria be established which would ensure that "only institutions with a serious research function be considered."

As expected, the paper says there is still a need for a body like GMAG, which oversees the safety of genetic experiments in which DNA is transferred between different organisms. But it also points out that most scientists now believe the hazards of such work are less than was thought when GMAG was set up in 1976. Since then, a new risk assessment

scheme has reduced GMAG's workload, and much of which remains concerns large-scale, industrial experiments.

The paper concludes that the transfer of GMAG's responsibilities to a new Advisory Committee on Genetic Manipulation is the best of four options discussed for the group's future. The others are for GMAG to continue unchanged; setting up two committees, one for the DES and one for the HSC; and a committee like the existing Advisory Committee on Dangerous Pathogens, which is responsible to both the department and the HSC.

The call came from Miss Mary Sugden, principal of the National Institute of Social Work, who saw the extra probationary year as an improvement to social work provision in the country.

She was echoing a recommendation made in the Barclay report on social work published last year as a general review of the profession, as requested by government ministers.

But the proposal is regarded as highly controversial because it might lead to the use of students as cheap labour with no guarantee of full employment.

Miss Sugden said the extra year would provide opportunities to build new working links between employers and educational institutions, and allow a chance for specialist training skills to be introduced after the end of a basic qualifying training course.

She told the annual meeting of the British Association of Social Workers the profession was failing its respon-

NAB wants to keep back research cash

by John O'Leary

A proportion of the Government's allocation to polytechnics and colleges of higher education will be kept back to fund research if a consultative document from the National Advisory Body is accepted.

The paper, which has been approved by both the board and the committee of the NAB, proposes the establishment of a research fund for 1984/85, the year for which a major restructuring of the public sector is already planned. A decision on the policy will be taken in the summer to enable the NAB to make allowances in the planning exercise.

It is suggested that the research fund should take between 1 and 5 per cent of the advanced further education pool. The paper states that there are several reasons for preferring the lower figure, which would have represented £6m this year. Chief among them is the likely damage to unit costs, since the only avenue of compensation - reducing student access - could be difficult to defend.

"In addition the larger the sum to be distributed the greater would be the danger that those authorities not allocated such funds would feel it unnecessary to use their general pool income for any research purposes," says the paper. "A smaller fund in the first instance would indicate that it is not meant to provide the exclusive source of research funding from the pool."

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Union rift with WEA on jobless scheme

by Karen Gold

A dispute is growing between trade union lecturers and branches of the Workers' Educational Association over proposals for an education and training scheme for the unemployed.

The scheme was negotiated between the WEA nationally and the Manpower Services Commission, under the new voluntary projects programme. But the full-time lecturers' rejection of its proposals has revealed a wider power struggle between branch management and unionists over who runs the WEA. The two bodies are likely to clash publicly within the next week, when the WEA publishes a statement of its grievances against the WEA branch of the Association of Technical, Managerial and Supervisory Staffs.

It will stress that the argument between the two sides is not simply about the WEA's participation in the VPP, which now looks increasingly unlikely following the lecturers' official rejection of it as undermining academic freedom and their pay and conditions. (MSC sponsored projects must be agreed by both management

and unions, since the MSC includes equal representation from both.)

Instead, according to WEA general secretary Mr Robert Lochrie, the argument is now "about whether or not the ASTMS WEA group accepts the voluntary democratic decision-making process of the WEA, and about how they have conducted themselves throughout the long process of consultation."

The ASTMS nationally has agreed to meet WEA representatives within the next 10 days, but has already stressed that all the union sections are autonomous in decisions such as these. The issue is also likely to be aired at the WEA's biennial conference in Harrogate next month.

The WEA has also written to all its branches asking them not to participate in any other schemes under the VPP until this problem has been solved. Had the scheme been agreed, a considerable number of WEA districts - which can also make an autonomous decision on this - would be likely to apply to run courses in basic skills for the unemployed, perhaps to the extent of £500,000.

Election policy poses tough test for NUS leadership

by David Jobbins

Labour leaders of the National Union of Students face a tough test this weekend when their political opponents press home the advantage scored when a draft post-school education policy document failed to be endorsed by the union's conference.

The NUS executive will have to decide how to handle the conference decision to refer the policy document, essentially written by Mr Tommy Sheppard, vice president for education and a member of the National Organization of Labour Students' back to it for further consideration.

Mr Neil Stewart, NUS president and a member of NOLS, is anxious the union should not be left without a coherent education policy in the run-up to the general election whether in June or October.

Either date precludes the possibility of waiting until a new policy document can be drafted and presented to the union's December conference. But the newly-regenerated Left Alliance, which led the opposition at conference, is certain to press home its advantage and demand wide consultations within the union.

'Re-form genetics watchdog'

The Genetic Manipulation Advisory Group should be reconstituted as an advisory committee to the Health and Safety Commission, according to a consultative paper issued by the Department of Education and Science last week.

As expected, the paper says there is still a need for a body like GMAG, which oversees the safety of genetic experiments in which DNA is transferred between different organisms. But it also points out that most scientists now believe the hazards of such work are less than was thought when GMAG was set up in 1976. Since then, a new risk assessment

scheme has reduced GMAG's workload, and much of which remains concerns large-scale, industrial experiments.

The paper concludes that the transfer of GMAG's responsibilities to a new Advisory Committee on Genetic Manipulation is the best of four options discussed for the group's future. The others are for GMAG to continue unchanged; setting up two committees, one for the DES and one for the HSC; and a committee like the existing Advisory Committee on Dangerous Pathogens, which is responsible to both the department and the HSC.

Call for longer training in social work

Social workers should train for an extra probationary year after the basic qualifying period they were told at a meeting in Manchester this week.

The call came from Miss Mary Sugden, principal of the National Institute of Social Work, who saw the extra probationary year as an improvement to social work provision in the country.

She was echoing a recommendation made in the Barclay report on social work published last year as a general review of the profession, as requested by government ministers.

But the proposal is regarded as highly controversial because it might lead to the use of students as cheap labour with no guarantee of full employment.

Miss Sugden said the extra year would provide opportunities to build new working links between employers and educational institutions, and allow a chance for specialist training skills to be introduced after the end of a basic qualifying training course.

She told the annual meeting of the British Association of Social Workers the profession was failing its respon-



A Jewish boy puts his hands up at the end of the Warsaw Ghetto uprising exactly 40 years ago. The picture comes from *The Track of Tyranny 1933-1943* a new exhibition that opens today at the Wiener Library, 4 Devonshire Street London W1, to mark the library's fiftieth anniversary. The library has also just bought an important new London collection of more than 1,000 books on Polish Jewry and the Holocaust for £10,000.

EEC backs special course for women

by Felicity Jones

A course to prepare female students to take a management studies diploma at Leeds Polytechnic has been given first priority for a £45,000 award from the European Economic Community social fund.

The idea for the preparatory course arose from the fact that few women applied for the polytechnic's diploma in management studies, which has been running for 12 years. Lecturer Sue Turnbull, who made the application, was prompted by the fact that women constitute 40 per cent of the workforce but only 8 per cent held top management jobs.

"Lack of confidence, a poor grasp of numeracy and inadequate communication skills are all factors which contribute to this state of affairs," she said.

"I believe that there are a fair number of very competent secretaries with the capacity to go further who need this sort of course to get them on their way."

It will involve a 15-month programme for unemployed women over 25 who have no formal management skills or training but wish to enter management. There will be individual part-time preparatory courses for 25 students with a practical summer placement with a local business after which 12 women will be given grants to cover fees, subsistence and creche costs to study for the one-year diploma.

There will be a screening process at the 21st week involving a numeracy test, a business aptitude test and an interview to decide which applicants will continue on to the diploma.

The EEC social fund is willing to finance courses which will train women to gain employment in areas where they are under-represented. Sue Turnbull said: "Women are increasingly needing management training as they become involved in running cooperatives and setting up small businesses."

A typical candidate for the course would be one woman who wrote to the business school inquiring about the diploma. She had no formal qualifications but had 20 years' experience establishing a building and joinery business with her husband and needed qualifications to compete in the job market since her marriage had broken down.

The conference was organized by the 9,000-member association on the theme Social Work in the Community, the key idea of the Barclay report.

She said there was urgent need for more specialist training and the probationary year seemed the most likely way of achieving this. She also urged a national review of manpower needs in social work, and new educational programmes aimed at residential and day care staff.

Cuts 'distort arts subjects'

Ministerial pressure to promote scientific work at the expense of the remainder of higher education could distort some subjects in the arts and social sciences, it was claimed at last weekend's annual conference of the British Association for American Studies.

Professor Dennis Welland, of Manchester University, said in his opening address to the conference at Edinburgh University he was worried by the new and contrary directions into which literary criticism and historiography were moving as disciplines.

"History is moving towards the statistical and the quantitative, criticism into too rarified an atmosphere of conceptualization and theory unconnectedly remote from a simple understanding of the text," he said. "When a tilt towards science is ministerially decreed for the universities and the non scientific is facili-

equated with the useless, there is a great temptation to seek to remain respect by adopting methods that can be presented as quasi-scientific."

He added: "We ought not totally to neglect or fail to make our students aware of works that had for earlier generations a significance greater than they seem to have for us... In focusing our attention on the great creative and imaginative artists we can too easily ignore the more focally minded artists of observation whose work is 'in the highest degree documentary'."

This plan for a greater tolerance of the "documentary novel" was linked to his own championing of Upton Sinclair, who he considers unjustly omitted from the Pantheon of American Letters. Many of Sinclair's novels such as *The Jungle* do indeed provide a strong link between labour and literature - the theme of the conference - if not "high" literature.

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News in brief

Unions call for legal basis

Government policies are counterproductive to adult education and training, which will continue to be undermined until it has a proper legal basis, according to a discussion paper published this week by two teaching unions.

The paper from the National Association of Teachers in Further and Higher Education and the Association for Adult and Continuing Education proposes a quality scheme for combined short-term employment and training for unemployed adults to replace the current £150m Community Programme; financial support for the unemployed to use the Open Tech; increased provision of general and job-related education for the unemployed, and a national adult and continuing education policy.

Fewer architects

There was a decrease in the number of students starting part one three-year architectural courses last year, according to a survey of the 37 schools of architecture carried out by the Royal Institute of British Architects. Numbers dropped from 1626 to 1605 although the polytechnics increased their intake. The proportion of women new entrants went up to 21 per cent.

Independent move

Dr Kenneth Miller has resigned from the University Grants Committee to concentrate on his duties as director-general of the Engineering Council. The two organizations will still discuss matters like four-year degree courses, but Dr Miller was concerned that they be seen to formulate their views independently.

New secretary

The new executive secretary of the United Kingdom Council for Overseas Student Affairs is to be Gill Taylor, the present head of student services at Chelsea College, London. She will take up the post in June, succeeding Mr Rupert Bristow, who is to become head of student services at South Bank Polytechnic.

New ABRC members

Two new appointments to the Advisory Board for the Research Councils are Professor Walter Bodmer, director of research for the Imperial Cancer Research Fund and Dr Tony James, head of Unilever's research division in bioscience. They will serve until 1985, and will join the "independent" members who make the first assessment of bids for funds from the five research councils in the Department of Education and Science's annual science budget.

Historical review

A series of regional conferences emphasizing the importance of history in general education will take place in the autumn, organized by the Historical Association, and the History at Universities Defence Group which operates under its aegis.

Minister clarifies jobless 21-hour rule

Confusion over the 21-hour study rule for the unemployed which has prevented hundreds of young people from attending colleges may end following a ministerial statement from the Department of Health and Social Security this week.

The statement, which clarifies the amount of study unemployed young people may do without their benefits being affected, was issued by Mr Tony Newton, joint parliamentary under secretary of state at the DHSS in reply to Mr Tom Torney, MP for Bradford South.

It is now clear that students are eligible for benefit provided they fulfil three conditions. They must not

Language 'biggest barrier for scientists'

by Jon Turney
Science Correspondent

English-speaking scientists are missing important results through neglect of foreign journals, according to a new study of researchers' reading habits.

Dr Andrew Large of the College of Librarianship of Wales, Aberystwyth, points out that while English is the leading scientific language it still accounts for less than half of all research journals. In a book published this month, he argues that "the foreign language barrier probably poses the highest current obstacle to scientific communication".

Dr Large describes how library surveys and citation studies show that British and American scientists use very little foreign-language ma-

terial. And ignoring foreign journals can lead to duplication of expensive research projects and, at worst, to unnecessary deaths when treatments for medical emergencies go unnoticed outside their country of origin.

The book's findings on Japanese journals are especially significant, as Japanese research and development is advancing rapidly in several key fields, including computers and biotechnology. The number of journals publishing papers in Japanese is growing quickly, but a reading ability in the language is almost non-existent among English-speakers, according to Dr Large.

And Irm Gow, research director of Mitaka Ltd, publishers of abstracting journals covering Japanese research, stressed that the country - already

recognized as a technological superpower - was well on the way to becoming a scientific superpower as well.

In spite of this, Mr Gow found that some academics still insisted that worthwhile Japanese work was all published in English, even when they had no knowledge of Japanese. Our scientists ought to be learning Japanese now, he said in keeping up with developments in pharmaceuticals, electronics and materials science. But there was still a widespread feeling that Japanese researchers produced little original work.

Dr Large found a slightly brighter picture in the other three leading scientific languages - French, German and Russian - but unfortunately reading abilities in these languages were "in inverse relationship to their

scientific importance", with Russian the least common ability.

His own solution to the language barrier is improvement on machine translation, as he holds out little hope for improving scientists' linguistic skills or for the international auxiliary languages like Esperanto, still promoted by some enthusiasts. "Machine translation offers a future in which raw, unedited output of scientific texts can be produced very cheaply and placed within the reach of scientists," Large writes. Ironically, the most active researchers on machine translation are found in a country especially keen to profit from foreign research - Japan.

The Foreign Language Barrier, by J. A. Large published on April 25 by Andre Deutsch, £9.95 pb.

Brent staff sanctions anger college unions

by David Jobbins

Enforced withdrawal of 28 civilian staff from the Hendon police cadet school is threatening to provoke a bitter dispute between Labour-controlled Brent council and the college lecturers' union.

Brent decided this week to withdraw the staff from the school as part of its campaign to secure the reinstatement of lecturer Mr John Fernandes, barred by the school principal, Commander John Wells, for leaking allegedly racist comments culled from cadets' essays to a television team.

Commander Wells has refused to reinstate Mr Fernandes, who has been criticized by his union, the National Association of Teachers in Further and Higher Education, for "unprofessional" behaviour in not drawing his complaints to the attention of union officials before going public.

Natfhe is not prepared to discuss the redeployment of the staff with Brent until the threat to withdraw the staff on April 25 is lifted.

Mr Peter Dawson, the union's general secretary, said: "We do not see withdrawal of such a large body of staff from their normal place of work as contributing to anything, let alone opposition to racism." Of the 28 staff 26 wanted to stay at the school.

Courtauld to move house

Negotiations between the University of London and the Department of the Environment on moving the Courtauld art collection to Somerset House have reached an advanced stage, the university announced this week.

Moving the institute and its galleries from Woburn Square to the Strand will mean that twice as many pictures as at present can go on public display.

The actual move will not take place until at least 1985 as legislation will be necessary to enable Somerset House to be used for non-Government purposes. The institute will also shortly be launching an appeal for £3m which it will need to adapt the building.

The art collections of the institute will be in the Fine Rooms, which were designed by William Chambers and built between 1776-78 for the Royal Academy, the Royal Society and the Society of Antiquaries.

King's College, London, is still negotiating with the Government for other parts of Somerset House.

The move of the Courtauld, which is a University of London senate institute will mean that the history of art is taught in the same building as the pictures are housed, and the Courtauld will be able to show 90 per cent of its collection. Now it only has the space for 40 per cent.

Professor Randolph Quirk, vice-chancellor of London University, said: "For the first time these pictures will be seen by the public in their own right. And the British public will also be able to see the Fine Rooms."

Many Natfhe leaders are privately angry at Brent's action when preservation of the status quo would open the opportunity for the neighbouring authority of Barnet to be included in discussions about the future of the school and its civilian staff.

Mr Dawson was more restrained: "I think it very sad Brent is taking this quite disgraceful industrial relations step in the misguided view that it is a weapon in the battle against racism."

But Mr Ron Anderson, chairman of Brent's further education subcommittee, said: "We are no longer prepared to continue to have anything to do with a course which does not take into account the anti-racist element of multi-cultural education which Mr Fernandes was teaching before he was excluded."

"Natfhe has been spectacularly unsuccessful in persuading the police to put this back into the curriculum. At the end of the day you have to stand up and be counted."

He said that all civilian staff at the school had been guaranteed suitable alternative employment within the borough's further education service.

Natfhe has accused the borough of breaching a national agreement that the status quo should prevail during negotiations to end a dispute. "The real status quo is to reinstate Mr Fernandes," Mr Anderson replies.

New fund to beat pirates

British publishers are to set up an anti-piracy fund worth £100,000 a year for three years to help recoup lost earnings of £100m a year.

The fund will be used to pressure government to update laws governing copyright infringements, to publicise details about copyright "pirates" and perhaps to bring overseas test cases.

The fund is being supported by most of the major academic publishers including Macmillan, Collins, Blackwell Scientific, Heinemann, Educational, Longman's, Pitman's and Associate Book Publishers. If successful it could lead in future to cheaper books.

The main target will be the Far East, particularly Taiwan, generally agreed to be the worst offender, but also Singapore, Hongkong and Malaysia. With test cases pending in Singapore, it is interesting to note that "piracy" is relatively low key at present. Worldwide "piracy" is said to cost publishers £500m a year.

In Britain publishers say there is no real problem over the piracy of books, but they remain extremely concerned about the copyright laws dating from 1956 which they say have long been in need of reform.

Mr Nicola Thompson, director at Pitman's, and chairman of the protection of piracy and protection of copyright committee of the Publishers Association, said: "Fight worldwide piracy after some years of hesitation. Full details were to be announced at an annual general meeting of the PA this week."

Paul Flather reports on the British Sociological Association AGM at Cardiff

New BSA fund to aid jobless

Sociologists in Britain plan to create a special development fund to help unemployed academics and graduates in the discipline to continue their studies and research.

The British Sociological Association at its annual general meeting in Cardiff last week, approved in principle a plan to divert more of its funds to prevent the appearance of a "lost generation of sociologists" because of the current lack of academic jobs.

Dr Janet Finch, president of the 1,400-member association, and senior lecturer in social administration at Lancaster University, said a healthy financial surplus had allowed the association to review its services to members. Details will be announced next month.

Among ideas now being considered are awarding grants to unemployed sociologists for the typing or completion of work, awarding travel grants to attend conferences or study

groups, and providing advice on job seeking.

The BSA is also planning to write to all heads of sociology departments asking them to consider awarding honorary fellowships to unemployed sociologists of proven academic merit in their areas.

The association believes this will give sociologists - particularly PhD students awaiting their first appointment - the "academic space" to pursue their studies without becoming demoralized. Precedents, based on the model of associate fellowships given to foreign academics, have occurred at Manchester, Surrey, and Warwick universities.

Dr Robert Burgess, secretary of the BSA, said: "We really want to act as a pump-priming body. Given the few jobs on offer there is already a vast group of sociologists with these completed waiting to be involved in teaching and research."

Journal's success story

Sociology, the association's journal, is in future to be provided free to all members, reflecting the profitability and success of the Journal to date.

It is currently edited by Professor Martin Albrow, professor of sociology at University College, Cardiff, with an editorial board drawn from a cross-section of the association membership.

It has also recently jumped from twelfth to sixth place in the unofficial world rankings of sociology journals in the English-speaking world.

The rankings are constructed by asking all journal editors to put a list of some 60 journals in order of merit.

Sociology, ranks below four American journals and the *British Journal of Sociology*, which is produced at the London School of Economics. Professor Albrow has been working

hard to make the writing as intelligible as possible by strict editing. "There is far too much sorting of ideas out in public," he said.

Shorter articles meant more published, and the average delay between submission and publication was cut from about eighteen months to about nine months in the past few years. In 1982, 94 articles were submitted, 31 accepted, 60 rejected, and three withdrawn.

Sales to institutions were 1,267 and to individuals £55, compared to 1,163 and £49 in 1975. The decline in give members free copies will add or subtract 500 readers.

During the same year the journal received some 500 books for review, much less than previous years, which the editors put down to the economic crisis in publishing.

MSC outlines its 'adult' approach

by Karen Gold

The Manpower Services Commission plans to issue a coherent adult education and training strategy before the end of the year, according to the consultative document it published on the subject this week.

The document, *Towards an Adult Training Strategy*, implies an even greater involvement of the mainstream education system, a higher, further and adult level, than the MSC has already.

At a press conference on Monday Mr Geoffrey Holland, the MSC's director, confirmed that the exercise would encompass money presently spent by the education service on adults. He estimated the amount involved as between £600m and £700m.

The document emphasizes the importance of lifelong adult training to respond particularly to new technol-

ogy and new skills, and although it outlines no specific action it does suggest that locally based initiatives, mainly directed towards people already in employment, will form the way forward.

It poses questions about the purposes and aims of an adult training strategy should have; its immediate, medium and long-term objectives; finding a balance between the need for a planned labour force and individual aspirations; and the possible agencies for developing such a strategy.

Funding for the strategy would come partly from a redistribution of the MSC's current spending on adult training, mostly on the Training Opportunities Scheme (TOS) of £280m.

But the published document also includes a paragraph not even in the final draft, repeating the commis-

ion's view that new ways of funding training "must be devised, which recognize the public and private benefits of training and the need for substantial state involvement".

Controversial early ideas from the MSC about the "private" benefits justifying private funding suggestions included a training voucher scheme and a local training tax on employers - have been dropped but are likely to reappear after the consultative period ends in June.

The purpose of the discussion paper is to raise the level of debate about adult training, according to MSC chairman Mr David Young. "At the moment adult training and retraining are poor relations" he said. "In the view of the Manpower Services Commission, adult training and retraining will be every bit as important in the 1980s as youth training."

The main aims of the new revision would include looking at applications of psychological knowledge to psychology teaching itself, acting as a pressure group seeking adequate funding for psychology teaching and research and setting up a clearing house for information about teaching methods and materials and student selection and assessment.

Dr Burgess also reported that the Argentine authorities had at least released Ernesto Villanova, a sociologist and former rector of Buenos Aires University. The association has made regular protests on his behalf.

About 250 sociologists went to Cardiff to discuss topics dealing with the theme, the periphery of industrial society.

Abrams prize

A memorial essay prize in honour of Philip Abrams, former professor of sociology at Durham University, who died aged 48 in 1981, has been established by the BSA. It will soon be open to recent graduates with £100 awarded for the best 6,000-word essay on a topic on which the highly regarded Abrams worked. Contributions to the prize fund are invited by the BSA.

Top poly post is blacked

A new senior administrative post at one of England's biggest polytechnics has been blacked by the local government white-collar workers' union in a dispute over reorganization.

Talks are planned later this month between the National and Local Government Officers' Association and senior management at North East London Polytechnic.

But if the dispute is not resolved Nalpo members at the polytechnic will be balloted on a range of sanctions already passed by a general meeting which will bar cooperation with the reorganization plan drawn up by the director, Mr Gerry Fowler, in an effort to cut costs.

Nalpo members will also refuse to work on any jobs advertising maintenance - internal or external - and to cooperate with anyone apologetic from outside.

If it is not resolved the action will

hit hardest in the new bursar's department, where Nalpo claims an outsider was appointed in breach of an agreement that posts should not be advertised externally until internal applicants had been considered.

The white-collar staff are also angry that plans for the reorganization - which could cost 100 posts, many by voluntary means - are being produced piecemeal. They want to be able to evaluate the entire plan before passing judgment on it.

Overall about one third of the white-collar jobs in the polytechnic's central administration will be lost - heavily concentrated in the departments which are being merged to create the new bursary which takes over estate management, maintenance, and the reprographic unit. Nalpo has negotiated a no-compulsory-redundancy agreement which terminates next March.

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Overseas News

China banks on the world for technological aid

by Thomas Land

China's universities have opened their gates to the West for specialist assistance in the teaching of science and technology to back its agriculture-based development strategy. In the long term, China hopes to attain self-sufficiency in food production.

Within the next three years, some 250 scholars and engineers from Britain, Canada, France, Japan, the United States and West Germany are to visit China to assist in a gigantic university development programme supported by the World Bank. About 75 of them will go this year.

The \$300m programme for higher education is the first project to be

assisted by the World Bank in China since it joined the institution in 1980. Financed in equal portions by the bank, the Chinese Government and the International Development Association, the programme is moving forward very quickly.

It is to help to increase enrolment of science and engineering students at 28 leading universities from 92,000 to 125,000, introduce graduate degree programmes, improve the quality of teaching and research and strengthen the management of universities and the ministry of education. The project also includes the purchase of a wide range of sophisticated teaching aids.

The visitors are to help build a new

infrastructure for science and technology training in a country which has one of the world's lowest university enrolment rates.

Western administrative support for the project is provided by the National Academy of Sciences, a private society of distinguished scholars based in Washington. The academy also administers other projects in China and elsewhere in the developing regions concerned with science in the service of agriculture, public health and education.

The specialists, who are being sent to China under a \$5m contract, have been selected by an international advisory panel established by the

Peking education ministry. The chairman of the panel is Dr Dale R. Carson, the physicist and president emeritus of Cornell University in the United States. The co-chairmen are Dr Edward Prestel of the University of Hannover, Dr Lionel Salem of the University of Paris-Sud, Dr O. I. Zienkiewicz of the University of Wales and Dr Edward Slater of the University of Amsterdam.

The panel works in conjunction with the Chinese Review Commission which is chaired by Dr Zhang Guang-dou, an eminent hydraulic engineer, vice president of Qinghua University and a member of the Chinese Academy of Sciences.

Staff may lose right to strike

from Emil Zubryn

Proposals to withdraw the right to strike from university staff are meeting vigorous opposition in Mexico. There are fears of social unrest if the new administration tries to force through legislation.

The new measures were put forward at a recent meeting of the National Justice Council, when it was also proposed that the Mexican Attorney General's Office should be empowered to prohibit university unions from engaging in political protests from unions and legal experts have been numerous and angry, solidifying the labour sector against the government.

Most Mexican experts to jurisprudence have supported the action made by Miguel Octavio Silva, professor of labour law at the University of Puebla, that the official labour law is unconstitutional. He added that a suppression of strikes in universities is an "abuse" measure since it is not possible that this right can be exercised by some workers, and not others.

While there has been a good deal of labour unrest in Mexican universities over the past few years, both over increased salaries and educational policies, the press and informed educational observers have labelled the drive against university strikes as a political move.

The forces marshalling against the governmental attempt at university strike suppression, have stated that the right to strike should be eliminated, it would make impossible the only legal arm which workers have to protect their rights.

In one of the rare records between labour and school administration, political economic policies were more damaging to educational goals than strikes.

Concluding in these terms, the report of the National University of Mexico (UNAM), the Autonomous Metropolitan University (UAM) and the Union of UAM Workers (SITUAM).

University and union researchers asserted that as a result of cutbacks in university budgets, and in other institutions of higher learning, more students have been abandoning their courses.

University and labour researchers, in their report, stressed that the government has persistently neglected the education sector and research. As a consequence, universities have been unable to initiate new career studies and postgraduate courses.

There has always been a chronic lack of funds for research. Now, coupled with the noticeable increase in student desertion from campuses, the researchers labelled Mexico's present educational system as "very grave."

Research investigation at Harvard

Another case of suspected research fraud in a Harvard medical laboratory is under investigation. The new case was reported by the Department of Health and Human Services just two days after the government had issued a strongly-worded memo to Harvard for its failure to look adequately into the falsification of data in a series of costly cardiovascular experiments.

The dean of the medical college, Dr Daniel Tosteson, telephoned the director of extramural research and training, Dr William Rauh, at the government's National Institutes of Health, the department's biological research arm, with news that the university had established an internal panel of inquiry on the matter on February 18.

According to Dr Rauh's office, the government will not initiate any action of its own until hearing from that panel, which is composed entirely of Harvard teaching and research staff. The name of the research fellow, an associate in the department of rheumatology, at the Harvard-affiliated Brigham and Women's Hospital in Boston, was not disclosed.

The chief physician of that department, Dr K. Frank Austen, said that the research fellow under question had been placed on leave of absence until the matter is cleared. In tandem with the medical school inquiry, a standing committee at the Massachusetts General Hospital is reviewing research the physician contributed to while in a four-year residency programme there.

The case, which involves arthritis experiments, came to light when the research fellow could not provide Dr Austen with supporting evidence for his laboratory results.

Unlike the highly publicized case of Dr John Darsee, who received the stiffest penalties ever meted out by the Government agency for fabricating heart-attack studies, none of the questionable data in this new case has been published. In Dr Darsee's case, nine articles he had written or co-authored with one of the nation's most eminent cardiologists, Dr Eugene Braunwald, were retracted.

Dr Darsee was barred from participating in any project funded by the National Institutes of Health for 10 years and Harvard has been ordered to reimburse the government \$122,371 it received to sponsor the experiments. In this latest case, according to a representative of the National Institutes in Washington, little if any federal money is involved.

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The case, which involves arthritis experiments, came to light when the research fellow could not provide Dr Austen with supporting evidence for his laboratory results.

Unlike the highly publicized case of Dr John Darsee, who received the stiffest penalties ever meted out by the Government agency for fabricating heart-attack studies, none of the questionable data in this new case has been published. In Dr Darsee's case, nine articles he had written or co-authored with one of the nation's most eminent cardiologists, Dr Eugene Braunwald, were retracted.

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Call for student union in Mexico

A growing number of student organizations in Mexico want to form a National Students Union.

Student leaders who prefer anonymity, with reason, claim that Mexican youth cannot remain isolated from other sectors of society.

Their demands include a freezing of enrolment and classroom facilities; public transport fares discounts; larger university budgets; autonomy in universities; and a "democratization" of centres of higher learning.

US clamps down on Libyans

from E. Patrick McQuaid

CAMBRIDGE Mass The United States government plans to throw hundreds of Libyan students out of courses in aviation, flight maintenance and operations, and all nuclear-related studies at colleges, universities, and vocational training schools throughout the nation.

The ruling also prohibits changes in non-immigrant status and bars reinstatement of student status, thus placing many of the affected Libyans in danger of deportation. Once students enrolled in these special programmes are dropped they will lose their student status if they do not switch to other courses within the same institution because the ruling also denies them the right to transfer to other schools.

Mr Michael Heilman, an attorney for the US Immigration and Naturalization Service, said that Libyan applications for transfer to other studies within the same institution would be reviewed individually to determine if their move "is a subterfuge."

The Libyans are each being notified that they will be placed on "administrative voluntary departure" which allows them 30 days to comply with the ruling or face administrative action. Schools do not face penalties, said Mr Heilman, for refusing to expel the selected students.

Mr Heilman believes there are between 4,000 and 5,000 Libyan students in America. According to *Open Doors*, published annually by the Institute of International Education in New York, there are roughly



Mr Qaddafi: expected to retaliate

3,000 Libyan students.

The ruling is expected to affect some 500 Libyans, said Mr Heilman. The Immigration office, a wing of the Federal Department of Justice, has a list of students and where they are currently enrolled.

In May 1981, with tension between the United States and Libya escalating, President Reagan ordered the expulsion of all Libyan diplomats. At the time his decision was to have no effect on students, according to the US State Department. Since then, however, the new secretary of state, Mr George Shultz, has ruled that "aviation and nuclear-related training of foreign nationals in the United States, whose skills could be used by the government of Libya, are detrimental to the security of the United States."

The ruling effects also "third country nationals acting on behalf of Li-



Mr Shultz: controversial ruling

byan entities" and bars employment as well as education and training to such people.

Mr Heilman unofficially expects that the Libyan chief of state, President Qaddafi, will retaliate. Already, President Qaddafi has announced plans to reorganize his military, a move American analysts say is intended to oust Western advisers and replace them with Soviet recruits.

According to Mr Heilman the ruling is the most restrictive the government has issued regarding students from nations where US relations are strained. Even during the height of difficulties with Iran, he said, the government's only restriction was that Iranian students report on their activities and whereabouts.

Various organizations and agencies concerned with foreign student affairs are protesting about the order.

Norway's district colleges go from strength to strength

by Henry Wassor

Norway is currently evaluating its most distinctive regional higher education. The goal of the Social Democratic Party was a district college for each of Norway's 20 counties. There are presently 17 district colleges ranging from deeply rural to completely town based.

While subject to the "academic drift" that two-year colleges face in other countries, Norway managed to develop distinct traits.

Under the leadership of former minister of education of Kjetil Eggeland, district colleges such as those in Kristiansund and Stavanger succeeded in being budgeted in substantial fashion for research. Many of the faculty were those well qualified for university positions in the expanding days of higher education but for whom only positions in the two-year colleges were available.

Courses of special vocational interest were developed, such as a one-year course for bookkeepers inspired by the Association of Book Sellers but increasingly the district colleges established courses which counted as university credits.

The universities were reluctant to accept transfers and attempted to enforce a foundation course. "Introduction to philosophy" on all students working towards a degree. This

course, at first available only in the universities can now be taken in various regions of the country in adult education centres.

The district colleges, using external examinations were able to have their year courses (*grunnlag*) accepted as the same as university *grunnlag*. Debate now centres on whether the *grunnlag* (a year and a half course) can be offered at district colleges.

Meanwhile, since 1981, the higher education non-university units (*høgskole*) have been able to offer a first degree by the accumulation of sufficient credits. A college of education generally offers three years of post-secondary work. With the addition of a *grunnlag* taken elsewhere in a non-university higher education institution such as a district college, a student may receive a degree without enrolling in a university. Or a student may put together two *grunnlag* and a *millionfag* (a district college and other higher education units).

The Norwegian district college has managed two unusual achievements. A degree may be achieved entirely within these non-university institutions. An approximate university workload level and university-level research budget have also been obtained by some district colleges, especially those in Stavanger and Kristiansund.

Expansion in Nairobi

by John O'Leary

As staff and students at the University of Nairobi bid to hear when the government will lift its closure order, a second university in Nairobi is preparing to expand.

The International University-Africa, based in San Diego, California, and with campuses in England and Mexico, was not penalized after last year's attempted coup involving a number of students. Partly as a result of the protracted closure of the main university, the private institution has attracted increasing numbers of intending students.

An initial enrolment of 16 students in 1975 had grown to 250 at the start of this year, bringing accusations of overcrowding at its site near the centre of Nairobi. Next month the International University will move into the former Mayfair Hotel nearby after a long search for larger premises.

A statement from the university repeated its primary commitment to the education of Kenyans but said that the Nairobi campus now included 12 African nationalities as well as students from the Middle East, Europe, Asia and North America. Almost 60 undergraduates and 60 postgraduates will receive degrees there in June.

The university's charter states that at least 40 per cent of the student body must be Kenyan. The only other higher education institution in the country which has been open to non-Kenyans is the Polytechnic.

Ceausescu

New Romanian legislation, which obliges all would-be emigrants to refund the state with the cost of their education is not a breach of the Helsinki Final Act. President Nicolae Ceausescu claimed during his recent visit to Vienna.

In an interview with Alexander Wachsmuth of the West German news agency DPA, President Ceausescu said that foreign criticism of the law amounted to "attempts to interfere in Romania's internal affairs."

Indeed, said Ceausescu, far from being a breach of human rights, the legislation, in Romanian eyes, was "an act of justice and equity" which pinpointed the obligations incumbent on all Romanian citizens. He said on all Romanian citizens: "All graduates of higher educational establishments were obliged to work for a certain number of years in the state, assigned to them, their higher education. Since, however, not many young people refused to take up their assigned jobs, cases of repatriation by young people remaining in Romania were extremely rare."

Bill redefines role of universities

from Guy Neave

PARIS The main lines of the higher education guidelines bill, shortly to be put before parliament, were discussed at a cabinet meeting last week. The bill, presented by M. Alain Savary, minister of education, will replace the *Loi d'Orientation*, passed in November 1968 to bring peace to the strife-ridden French universities.

Even at the draft stage, there are marked changes in the offing for higher education. The university's role is drastically redefined. Considerable emphasis is to be laid upon both professional and vocational training and the development of in-service courses is also to be a priority.

A greater emphasis is to be placed on research. Other priorities are emerging, particularly teacher training and further courses for staff later engaged in in-service education.

Despite demographic decline, French policy is to continue to invest in updating its education system and teacher education is seen as a significant vehicle for this.

The structure of undergraduate and graduate courses is to remain as at present, organized into two cycles. But there will be a considerable shift of emphasis on the type of education provided. Students will still receive a broad general education but they will also be given a vocationally relevant qualification.

With certain notable exceptions, in particular the *grandes écoles*, access to first cycle studies will not be selective.

This is not the case for second cycle work leading either to the licence or to the *maîtrise*. Though the word "selection" is not mentioned, entry to this phase will be limited by

the numbers of places available at a particular university. And in their turn, the number of places will be determined by the outlets on the labour market. This, of course, is selection by another name.

Higher education establishments are to be given a new legal status which will allow them to develop direct links with commerce and industry.

Participation in the life of individual establishments is strongly underwritten and the number of local worthies sitting on university bodies, increased. Each university will have three councils - the governing council, an academic council and a council dealing with university affairs and study courses. The vice chancellor will be elected by all three sitting together.

More details have also appeared on the future linkage between higher

education and the local or regional community. Two types of joint committee are foreseen. At departmental level this will involve a coordinating committee for higher education and at regional level a consultative committee. Their purpose will be to ensure better coordination between university development and local interests. As yet, their membership remains unspecified.

There is also the possibility of yet another national body. This will take the form of a national evaluation group to vet the type of courses developed within individual establishments.

There are also proposals for an inter-ministry commission for forward planning. Its responsibility will be to indicate where new courses and qualifications might be developed in the light of changes on the labour market.

Leavers 'had better offers'

from Bernard Kennedy

ANKARA Professor Isnan Dogramaci, head of the powerful Turkish higher education council has made his first public reference to the recent wave of sackings and resignations among university teaching staff. His comments came at a press conference during which he announced proposals under which the system of enforced transfer of lecturers from one university to another will be lifted.

Professor Dogramaci was not, he said, in a position of comment on the dismissal of a total of 40 teaching staff by the intervention of the martial law authorities over the last few months, since this had nothing to do with the HEC. As for the 200 or so resignations of the present academic year, the professor suggested that some were the result of attractive offers from Arab and African universities, while others were those of individuals who were not up to the job.

However, it is known that a very significant proportion of the resignees were used by the centralization of the university system, by the dismissal of some of their colleagues or by the appointments made since the HEC was established.

One piece of good news for teaching staff is that they are not likely to have to draw lots to see which of them are to be appointed to vacant posts in far-flung universities next academic year. Instead, the HEC will have the power to make temporary appointments to these universities, the lecturers in question remaining employed by the same institution. Similarly, the rule under which academics could only be elevated to a professional seat if they moved from one university to another will be done away with before it ever really came into effect.

Emergency measures in Venezuela

from Muriel Pilkington

CARACAS While Venezuelans were still reeling from the drop in oil prices and the devaluation of the bolivar, which had enjoyed a stable exchange rate of 4.30 to the dollar for 20 years, Fundayacucho was one of the first government institutions to announce emergency measures.

The "Gran Mariscal de Ayacucho" Scholarship Foundation was founded in 1974 in anticipation of the transfer of technology that would be needed after the nationalization of Venezuela's mineral wealth, which took place in 1975.

Until then, the country's mineral wealth had been foreign owned. Local labour was used only for the dirty jobs, with the foreign companies importing specialists, technicians, managers, etc. As a result, Venezuelan university students had become used to having to study law, medicine and the humanities.

This, plus an almost total lack of technical colleges, meant there was a dearth of home-grown technology. Hence the need for Fundayacucho, which was named in honour of Field Marshal Antonio José de Sucre 150 years after he commanded and won the decisive battle of Ayacucho during the war of liberation against the Spaniards.

Between 1974 and the end of 1981, when the programme was temporarily suspended because of the worsening economic situation, 30,017 scholarships were granted at a cost to the state of 2,615 million bolivars, or over \$600m, or roughly \$20,000 per student.

Average figures for these years show that just over a half of the students took or are taking first degrees, the rest being postgraduates. Of first-degree students just under a half study abroad while only one tenth of the postgraduates study at home.



Education in the provinces is poor

Of the 10,228 scholarship holders still studying at the end of 1982, 6,571 were abroad. Of these, 4,898 are in the United States, 786 in France, 260 Mexico, 225 in Canada, 171 in Britain and 102 in Germany.

By 1982, the average of 4,000 scholarships awarded per year had been reduced to 2,000. That year, students were selected but their studies were deferred because of budget difficulties and it is only now that those chosen for 1982 are being called in to register.

One of the main aims of the foundation was to give preference to young people from poorer homes in the provinces in an attempt to even out the traditional imbalance between the capital, Caracas, and the rest of Venezuela. While the intention was commendable, it failed to take into account the poorer standard of secondary education in the provinces.

The state-supported foundation is reluctant to release drop-out figures that would reflect badly on the government but the rate is said to be still studying at the end of 1982, 6,571 were abroad. Of these, 4,898 are in the United States, 786 in France, 260 Mexico, 225 in Canada, 171 in Britain and 102 in Germany.

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denies breaking Helsinki agreement

In fact, the excess workforce is mainly absorbed into agriculture. This is a notoriously unpopular sector with young people, so much so that two years ago, special legislation had to be introduced to ensure that graduates of agricultural schools and colleges actually worked on the land, instead of using their diploma to secure a job in the civil service.

With virtually all employment in the gift of the state, the possibility of a graduate who refused to take up his or her assigned post, finding another more congenial job is indeed rare - at least without a close relative in a post of influence in the state or party apparatus.

The president claims the repayment arrangement is a standard obligation for "a certain number of years" but in the case of emigrants the obligation is imposed on anyone of working age (even though he or she may be close to retirement).

Emigrants also have to repay their loans in western currency - which Romanian citizens are specifically forbidden to possess in West Ger-

many and Israel (the countries most affected by the issue since it has mainly been members of Romania's German and Jewish minorities who have been allowed to emigrate in the past few years). The new legislation has been viewed as a ransom to be paid by friends and relatives abroad. Last month, when Shimon Peres, leader of the Israeli opposition Labour Party, visited Romania, he was reassured that this was not the case. Peres said in an interview on Israeli television that the president had assured him that the Israelis were under a false impression about this.

Mr Ceausescu had told him, "such family reunions will continue as they did in the past, in the same way."

Moreover, said Peres, one must remember that this was not a specifically anti-Jewish move - the rules also applied to German emigrants - and he has personally thanked Ceausescu for the fact that "Romanian Jewry is the only large Jewish community which was saved as such."

At a time when the Soviet Union is clamping down on all Jewish emigration (exit visas are now down to a few dozen a month), it is painful for the Israelis to feel that Romanian Jews are not being treated as a special case. Mr Ceausescu, however, would also clearly like to win credit as a major negotiator in the Middle East settlement (reportedly, a Nobel Peace Prize is among his greatest ambitions). With in the next months Romania's Most Favoured Nation Status vis-à-vis the United States is due to expire and the State Department has made clear it cannot be renewed while Romania is imposing the "education tax."

Such a situation is specifically covered by Article 304A of the 1974 Trade Act (the "Jackson Amendment") which was introduced to counter similar repayment obligations imposed by the Soviet Union on Jewish intellectuals.

Two states stop fees extortion

from A. S. Abraham

BOMBAY The new government of Andhra Pradesh state in south India (capital Hyderabad) has overnight abolished the extortion of capitation fees by private medical and engineering colleges. The government of neighbouring Karnataka state (capital Bangalore) is adopting a more gradual course in the matter.

In both states, Mrs Gandhi's Congress (I) party was routed in provincial elections at the beginning of the year. Both parties that came to power - in Andhra Pradesh, the Telugu Desam, led by film star N. T. Rama Rao, and in Karnataka, the Janata - had promised to abolish capitation fees. Within a month of taking office, Mr Rama Rao proved as good as his word.

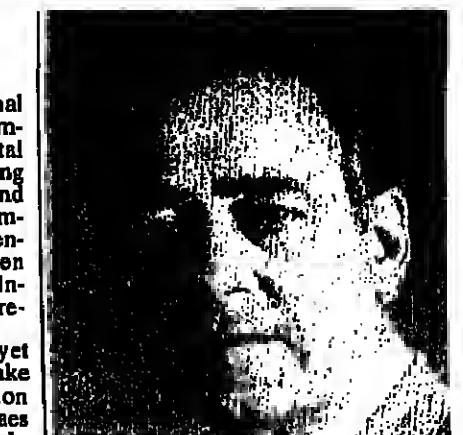
In Karnataka, however, the provincial government is taking a "practical view". The chief minister, Mr Ramakrishna Hegde, denies that his party is going back on its promise saying that a "five-year scheme" to

liquidate it will be implemented as soon as the courts clear it.

The scheme, formulated by the previous Congress (I) administration, has never been enforced because medical and engineering college managements have challenged it in court.

But the Congress (I) was not serious about enforcing it either, even as it sought to abolish the exorbitant charges for admission it allowed the colleges to take in up to half as many students as before. Mr Hegde says his government will not allow them to raise their intake further "with immediate effect."

Karnataka was the first state to charge capitation fees. Only a few places are filled purely on merit. Eight medical colleges in Karnataka officially charge between \$3,000 and \$4,000 for "local" candidates (resident in the state) and twice as much for "outsiders". Twenty-nine engineering colleges charge between \$2,000 and \$3,000. Officially, even larger amounts are said to be demanded.



Engineers 'have wide responsibility'

Lord Flowers, rector of Imperial College, London told delegates to the second world Conference on Continuing Education: "It is not enough to know how to develop a new process or invent a new technology."

In a keynote address to the conference held last week at Unesco headquarters in Paris, Lord Flowers (above) stressed the wider responsibilities of engineers to the community.

"We must know whose purpose it serves and to whom it may do a disservice. We must know how much it costs and what are the alternatives," he said.

The conference, attended by some 400 delegates, took place under the patronage of M. François Mitterrand, president of the French republic and of Joesco's director general, Amadou Mahtar M'Bow.

In the last ten years continuing engineering education has developed remarkably, particularly in France. It is reckoned that some 12 per cent of French engineers attend courses each year. These last on average 16 days, the conference was told.

This is partly due to the law on technological education passed in 1971. This sets aside 1.1 per cent of a company's payroll for retraining purposes.

Engineers have been especially quick in making use of its facilities. Around 700 to 800 technicians retrain each year via continuing education for engineering qualifications in France.

To some extent, continuing education is often seen as an instrument for social equality. Current French policy, however, will be to reserve a high proportion of places in the training system for engineers. They are regarded as crucial for the economic recovery of the country.

The importance of the 1971 law was given full recognition in the conference. Jacques Dailors, away from his duties as France's minister of finance, was awarded the Leonardo Da Vinci medal by the president of the European Society for Engineering Education, Professor Dieter Seitzer.

Education in the provinces is poor

Booking a place in history

Paul Flather visits the Marx Memorial Library

There was a traffic jam in the usually quiet Swains Lane which runs along one side of Highgate Cemetery on March 13. Black limousines bringing East European diplomats fought for parking space, television crews jostled back-packer-carrying foreigners. At the entrance postcard sellers were doing brisk business. All was in honour of the hundredth anniversary of the death of Karl Marx, who is buried in the cemetery.

Mr Gordon McLennan, general secretary of the Communist Party of Great Britain, gave the official graveside eulogy at 2.15pm, and by 2.45pm, the reported time of Marx's death in 1883, his imposing gravestone was bathed in flowers, many red carnations.

London of course played a central role in the development of Marx's life. He spent his last 34 years in exile in the city, much of it working in the British Museum. He died little known by Londoners, even among socialists. But he has left a significant legacy, including the Marx Memorial Library at 37a Clerkenwell Green, home of so much early labour history.

The library, a charity relying almost entirely on voluntary help and extensively on book donations has just received a much needed boost from the Greater London Council as its committee under Tony Banks as its contribution to the Marx anniversary. It has received £5,000 for mounting a lecture series and preparing an exhibition and a further £15,000 capital grant is under consideration. The GLC has also earmarked £30,000 for other events, including a picnic on Hampstead Heath.

The library dates from 1933 when radicals and socialists held a conference in the Conway Hall to decide a fitting memorial to celebrate the fiftieth anniversary of Marx's death. Speakers noted the burning of Marxist and progressive books in Nazi Germany at the time, and unanimously agreed the answer was to create a workers' school and educational centre.

The library started with 5,000 volumes that October, and gradually built up to its current stock of more than 100,000 books, pamphlets, periodicals, and photographs. Indeed, Andrew Davies, the part-time librarian, admits he has no real idea of the exact number of books as every week readers from all over the world pop in to donate more volumes, on average 200-300 a week. There are thousands still to catalogue. Davies, a former Oxford law graduate, mixes his time teaching, researching the 1930s depression, and working three days a week in the library.

His prized possessions include Friedrich Engels's own marked copy of Das Kapital, Rosa Luxemburg's copy of The Moral World, and William Morris's banner of the Ham-



Andrew Davies with Engels's copy of Das Kapital

mersmith Socialist Society. The library also owns an original of the first edition of *Iskra*, Lenin's newspaper, "the Spark" that led to the 1917 Bolshevik revolution.

Lenin used a room in the house to edit issues 22 to 38 of *Iskra* while he was exiled in London in 1902-03. The paper was set at a little Russian printer's shop in the East End and shipped back to Russia. The library has restored the Lenin Room with a complete set of Lenin's works, a bust of the man, and a visitors' book containing some distinguished names.

The Lenin Room is simply the most obvious manifestation of the incredible historical background of the library building. Lenin himself shared the room with Harry Quelch who was editor of the Twentieth Century Press, or "the TCP" as it was known, the first socialist press in Britain founded in the building in 1893.

In *A House on Clerkenwell Green*, Andrew Rothstein traces the unique history of the building from its origins as a Welsh clergy school from 1738 to 1772; when it was owned by a "greengrocer and twopenny postman"; when it became the Northumberland Arms, important meeting place for working men and Chartists; when it became the London Patriotic Club in 1872, a radical working-men's club sponsored by John Stuart Mill among others; to the time when the TCP was set up with its journal *Justice* edited by Harry Quelch. That ceased publication in 1925, and was succeeded by *Social-Democrat*, which lasted until 1933.

The library is aptly located and has used part of the GLC money to mount an exhibition on the theme of British labour movement history since the death of Marx. The next lecture in its series on the British Marxist tradition is on April 28, on the 1950s by Eddie Frow.

Davies is also preparing a permanent exhibition of the artefacts of radical and early Marxist literature collected by the late James Klugmann, for so long editor of the Communist Party journal, *Marxism Today*, though in its more orthodox days, Klugmann joined the CP in Cambridge in the days of Blunt and

Philby but was always open about his allegiances. He left his 20,000 volumes to the library, including many unique pamphlets he picked up over the years of London harrows, some dating from the Levellers in the 1640s. "A real treasure trove of stuff still to be sifted," Davies sighs. He hopes to open it on the fiftieth anniversary of the library in the autumn.

If it receives a further £15,000 from the GLC the library should be able to purchase new material to turn itself formally into a national and international centre of radicalism, chartism and early socialism. At £50,000 expansion appeal, sponsored by prominent trade unionists, academics and MPs, including Michael Foot, Christopher Hill, E. P. Thompson, and Raymond Williams, launched in 1977 is still currently short of its target.

At present the library boasts 800 individual members and 100 affiliated bodies, which together with wills and legacies, book sales of the many duplicates presented to the library, donations, and research fees, covers its £20,000 a year budget. "We are very dependent on voluntary help," Davies says. Useful money comes in fees, for example, charged to Granada for research for its recent Spanish Civil War television series, and the BBC for its Marx in London series.

Current radical links are maintained with socialist scholars and trade union researchers often beavering away in the library in the evenings. The Fleet Street branch of the Electricians, Electrical, Electronic, Telecommunications, and Plumbing Union, headed by Sean Geraughty meets there, keeping up present traditions. As Joe, a South African exile who regularly works in the library, said: "There is nowhere else in the country with such a collection and with so much labour history under one roof."

"*A House on Clerkenwell Green*," price £1, by Andrew Rothstein, and *price £1 of the lecture series from the Marx Memorial Library 37a Clerkenwell Green, London EC1, open 2pm to 5pm weekdays, 6.30pm early closing Mondays and Fridays, Saturdays 11 to 1pm.*

Pop it in the post

Computerized letters, in common experience, arrive at least once a week announcing that you and your abode (plus everyone else in the telephone book) have been singled out for this special attention.

But for distance-learning students and tutors, computer-written letters any spell the answer to a previously intractable problem of their kind of study: keeping the student motivated to the end of the course.

The letters are sent out by a system called MAIL: micro-aided computer learning. They cover two pages of A4 paper, chatty praising right answers to a test assignment, correcting wrong ones, and suggesting ways and exercises to avoid the same mistakes again. They are personally addressed to the student and "signed" by the tutor.

Yet they are entirely written by a small BBC microcomputer, printed out almost quicker than the eye can read, and - galling for conscientious tutors - the students actually prefer them to assessment and advice by human markers.

Research carried out in Scandinavia in recent years has established that distance-learning (correspondence courses) students need to hear from their tutors no more than six days after carrying out an assignment for them.

After waiting six days, the students - notoriously isolated, mainly occupied with other activities than study, and easily discouraged - are no longer interested in their last essay or test, and therefore unable to build upon any comments or advice they eventually receive back with it.

Yet the conventional marking system, whereby the work goes from student to tutor, to college for registration and then back to the student, plus the vagaries of the postal service, mean few students receive their work back in under 10, and more often, 14 days.

Cutting down that time by using multiple choice tests and computer marking the answers is nothing new: the Open University has done it for years. But the use to a student of a series of "ticks and crosses" type marking is recognized by the OU as much as anyone: hence their balance between computer-marked and tutor-marked assignments.

Under the MAIL system, the assignment can leave the student on Monday, be at the college Tuesday morning, marked and in the out-tray again by 10am and back with the student in time for breakfast on Wednesday. Even allowing for weekends and Post Office delays, there is a huge margin between that and the six-day deadline.

The system has been introduced into this country by the Cambridge-based National Extension College. Its director, Richard Freeman, spent two years trying to persuade colleges and mainframe computer manufacturers to take it on; eventually, having raised no enthusiasm, he realized the whole thing could go on a micro-computer and decided the NEC should do it itself.

The NEC is currently using it for its combined numeracy course with

Karen Gold reports on how computer-written letters can help distance-learning students

television: "Make it Count". It will be available to other distance-learning course organizers from September and has already aroused wide interest from colleges and polytechnics.

It is typical of the potential in "the bargain basement level of information technology", which holds out exciting prospects but also severe dangers for distance learning. Mr Freeman told a recent conference on continuing education.

Open learning was about three things, he said: students learning what they wanted, not what institutions wanted them to learn; students learning when they wanted, rather than to an imposed timetable; and students learning where they wanted to, not where other people - or the availability of expensive technology - dictated.

From this followed three principles for applying information technology to open learning. The first was that it made possible something that could not be done before, such as the very fast feedback of the MAIL system, or the new systems of teaching typing or tables and fractions to children.

All of those involved tedious, repetitive tasks, which by using simple technology - sometimes just cassette tapes - could release staff for more worthwhile work. The MAIL system may soon be adaptable for writing reports instead of letters, which would make far easier another repetitive task.

His second principle was that something done with IT could be done cheaper than otherwise, and that saving could be passed on to the learner. The third was that IT could offer greater flexibility, perhaps eventually writing courses in such a way that learners could pick out the parts they wanted.

The most important thing about the MAIL system was that the learners needed no access to any technology at all, he said. "No FE college is going to have 8,000 visual display units."

It was very cheap - £2,000 - It was easy for tutors to use - they simply have to write in the replies they want printed out for no more than four possible answers, a, b, c or d, to no more than 10 questions for one assignment - and they could add on to it without disturbing the existing course.

Each course can have up to 15 of these tests. For each test the tutor constructs a personalized letter from a series of comments, and has to specify the number of questions, the number of blocks - the test can be subdivided into one to three blocks - the correct response letter for each question, the score for each response, block questions and block comments.

David Black talks to two lecturers whose aim is to bring some "savvy" into the lecture room

All 43 of last year's graduates from Strathclyde University's successful technology and business studies BSc course got jobs. Former students from the course's first intake in 1974 are now commanding five figure salaries, and some top £20,000 a year.

Against a background of 20 per cent graduate unemployment, competition for this year's intake has been the stiffest yet, with seven applications for each of the 44 places. But despite its success, and the demand for places, plans to expand the course have been shelved indefinitely.

However, compared with Strathclyde University as a whole the course has fared well. It had to trim its budget by a mere four per cent compared with an overall 14 per cent.

It escaped largely as a result of encouragement from the UGC and, according to Professor Robert Shaw, who runs the course, the boundless goodwill of the university senate.

But the course has one over-riding

Oiling the wheels of industry

requirement - it must maintain a high staff-student ratio. One year the intake shot up to 52 because more students had satisfied their provision at offers than had been expected. The other half of the course's two-man team, Dr Keith Macrosson claims: "Through that we found our level. We were creaking at the seams. There comes a point that the core staff can't cope, can't give the level of close relations that's desirable."

Professor Shaw agreed: "With two full-time staff we can cope with an upper limit of 50, but moving beyond that, to provide the level of pastoral care necessary, we need more staff."

The course is part of Strathclyde's business school which includes law, business administration and economics departments. At present those departments as well as engineering and science schools all contribute to the course.

Visiting lecturers are encouraged and students have to teach themselves the "art" of management by entering into extra-curricular activities.

Dr Macrosson said: "Many of our students have gone on to become union presidents, or heads of various societies. It gives them an opportunity to cut their teeth in dealing with people and helps mature them."

Big business seems to approve the recipe. Since the course was launched over 70 big firms worldwide have expressed an interest. Three years ago, for example, a major oil company executive told Professor Shaw he had just interviewed 200 Oxbridge graduates, and had taken on only two. They were all academically bright, but "not suitable". "They now concentrate on us and a course in Birmingham for their graduate recruitment."

He believes that as former stu-

dents rise up the power ladders in industry, there will be a greater awareness of the course's potential and even a possibility of outside sponsored research funding.

Already, one of the course's 1978 graduates, who has now become head of a firm employing 280 people, has been directing prospective managers to the course. But Professor Shaw rejects the label of a "Mafia". He calls it "lubricating the wheels of industry".

But passports to this school are not gained by mere academic success. Running a business demands "savvy" and that is what Professor Shaw demands too.

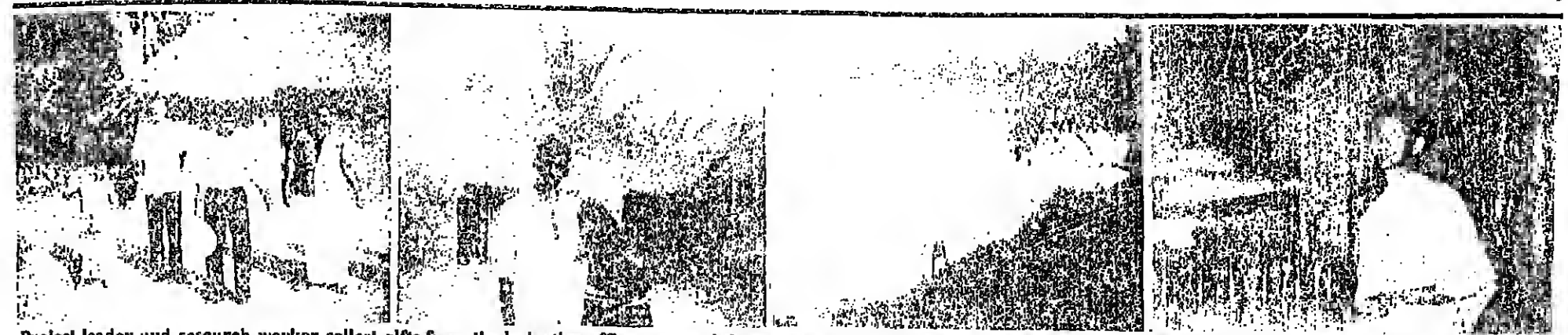
"Not only must they be numerate and literate, I want to see leadership and the ability to communicate, I want drive before good grades," he says.

of technology" speech, and the Swann and Dainton reports in the late 1960s. What was being advocated was a more vocational approach in preparing graduates.

Students are told from the start: "You are here to prepare for the future. When we are finished with you, you'll be in a position to go out and generate wealth for the nation."

Professor Shaw admits: "You don't teach management - you learn it on the job." So the course is aimed at giving a working knowledge of what it is like in the big bad world. It calls on over 20 separate departments within the university to combine subjects like bio-technology and engineering with marketing and accountancy. It even counts as a qualifying degree for the Institute of Chartered Accountants of Scotland.

There has been considerable interest from universities abroad - from Honolulu to Western Australia. Professor Shaw feels that what is happening in Strathclyde could be the blueprint for industry management teaching for the future.



Project leader and research worker collect gifts from the irrigation officer (centre left) on their way to see villagers complete steps to the water reservoir. The unofficial leader of the village, (far right) proudly displays the treasures of his temple.

Conserving the water of life

Patricia Santinelli visits Kelagama village in Sri Lanka to report on a United Nations University project

No sleep, intense heat and a long journey could easily lead to a jaundiced view of Kelagama village in Sri Lanka. This is where the United Nations University has successfully revived traditional water management for the irrigation of paddy rice lands as part of a project called "Sharing Traditional Technology".

In fact they are almost a prerequisite in appreciating the problems of the dry zone region in the North-west of the island, where water is the scarcest and most unpredictable resource.

By the time you have driven four hours from Colombo to Kelagama - 11 km from the nearest town and along a three-mile dirt track which is impassable by cars during the rainy season - you have one constant thought - water.

Indeed this leads to an almost irresistible urge to jump in with the frolicking buffaloes in the water reservoir, which has been reorganized to radically alter and improve the lives of many of the 600 villagers.

The importance of water, its conservation and management in the dry zone of Sri Lanka in particular is best expressed by some words in the chronicle *Mahavamsa*. These are attributed to King Parakrama Bahu I who undertook major irrigation works about 800 years ago:

"In my kingdom are many paddy fields cultivated by means of rainwater but few indeed are those which are cultivated by means of perennial streams and great tanks. By rocks and by many thick forests by great marshes is the land covered. In such

a country let not even a small quantity of water obtained by rain go to the sea without benefiting man."

Kelagama is only one of 25 villages in eight Asian countries - China, Indonesia, Japan, Malaysia, Nepal, Philippines and Thailand - which participated in the STT project. This was coordinated by its originator, Chandra Soysa, a director of Sri Lanka's Marga Institute. This is a private multidisciplinary research centre in Colombo mainly concerned with development studies.

The main aim of the now completed project was to examine how different types of traditional technologies could be revived or enhanced scientifically to help local people and the environment. A subsidiary objective was to see how the experience could be transferred either within the country or to others with similar problems.

In Kelagama, the experience revived the traditional irrigation methods. These had fallen into disuse for a variety of reasons and for some time hardly any of the community-held paddy lands and only 15 acres of private lands - amounting to a quarter of the total - had been cultivated. Most of the village's farmland was in the highlands which

yielded cash crops as well. Collective water management in Sri Lanka derives from the highly sophisticated irrigation technology for paddy land cultivation that dates back 2,500 years.

In fact the effective use and conservation of water through maintenance and repairs or irrigation channels, control and minimal use of water during land preparation and control of its equal use during the growing season have now become even more important.

The Sri Lankan government has embarked on a massive land settlement for smallholders. It is providing irrigation in 350,000 acres of new land in the dry zone to reduce unemployment, increase food supply and generate electricity.

The plan involves developing the largest river basin in the country, the Mahaweli. This does not depend solely on water but on its effective management and conservation.

Kelagama is a perfect example of the problems created because collective water management has gradually become a lost skill. This happened under successive colonizers, ending with the British who eliminated the Villages' Council of Elders to stop civil unrest. Its effect was to weaken

if not destroy the organizing power behind communal water management.

In Kelagama this had been intensified by other factors. Paddy lowlands had provided the principal crops until an increase in population outstripped its food supply. As a result villagers turned increasingly to highlands agriculture - up until then a subsidiary activity.

This led to a major neglect of the lowlands which was exacerbated by lack of leadership, wealthier farmers seizing small ruined tanks and encroaching on state lands, and by bilateral inheritance which led to fragmentation of communally-held land.

For the Sri Lankan project coordinator, Dr Wickrema Gunasekera and the research worker, S. B. Disanayake, of the Marga Institute, the experiment was intended to show villagers that even with a limited supply water you could get a rice crop and meet domestic and livestock needs.

The experiment used *kudkuan* or dry sowing of rice which uses less water but needs more concentrated effort. It was only successfully done once. Since then, successive droughts have prevented a repeat but the villagers and the institute are confident that with the limited supplies available, it can be done again this year.

UNU's quest for peace, survival and growth

As we move more deeply and almost inexorably into global crisis, the seven-year-old United Nations University enters one of the most critical periods of its life.

For 1983 marks the launch of a new cohesive phase of programmes designed to enable the UNU to respond more positively, effectively and flexibly to the impending crisis.

The launch comes at an appropriate time, for only two months ago, the Trócaire Commission's latest report "Common Crisis" called for an emergency action programme to rectify the inertia of the last three years which it says threatens future survival, in particular the total disarray of the world economy.

The Brandt report identified a World Economics Institute as a move into the right direction. The university is already trying to make a major contribution in this area, through its global economy programme, working on the setting up of a World Institute for Development Economics Research (WIDER).

The institute is likely to be established this year when a decision on its location and funding has been reached. Both the Dutch and French have shown great interest in providing a home for the institute.

One of the greatest advantages of the institute is that as an incorporated part of the UNU it will have the same autonomy and academic freedom and its financial independence is likely to be ensured through an endowment fund.

This should enable it to grapple with the world economic crisis, particularly in the context of developing countries, without being limited by purely national considerations.

Both the new cohesive programme and the setting up of incorporated institutions represent two goals. Rector Soedjatmoko outlined as aims of the UNU during 1982/83 which he originated almost within a year of taking over the rectorship. The MTP is designed to build on the basic foundations of the UNU. The university charter granted by the United Nations remains the same.

The central operations of the UNU will continue to be through the worldwide community of scholars and associated institutions which now number 30, and 120 training centres in over 60 countries.

The five themes of the university are: Peace, Security, Conflict Resolution and Global Transformation, The Global Economy, Hunger, Poverty, Resources and the Environment, Human and Social Development and Coexistence of Peoples, Culture and Social Systems, Science and Technology and their Social and Ethical Implications. The 12 Sub-programmes are: Peace and Global Transformation, Global Economy, Energy Systems and Policy, Resource Policy and Management, Food Energy Nexus, Food, Nutrition and Poverty, The Development Problematique, Contemporary Households and Social Changes, Cultures and World Development, The Information Society, Science Technology and Social Innovation, UNU Outreach and New Modes of Sharing. The three divisions are: Development Studies, Regional and Global Studies, Global Learning.

Nevertheless Soedjatmoko's plans approved by the UNU council but not with the entire support of some programme coordinators, has meant a total reorganization of the UNU structure. This is within the context of three main thrusts: peace, development, science and technology, overlaid by a deep commitment to communication.

The UNU now has five themes which are enacted through 12 sub-programmes and administered through three new divisions, which embrace previous work of the UNU.

One of the guiding principles of the MTP is a commitment to interdisciplinary analysis of issues and a determination to study them at all levels whether local, regional and global.

Another emphasis is that there should be horizontal integration across disciplines and vertical integration across geopolitical units.

Rector Soedjatmoko says that the MTP emerged because when he came to examine what the university had been doing, he realised that he could not look at development problems in isolation.

Soedjatmoko also firmly believes that if the charter of the university says it should be concerned with problems of human survival, then one of its central objectives should be peace.

which he identifies as inequality and exploitation. The area of science and technology is another major concern of the rector.

"I believe new dependencies on the North are being created and that unless the Third World develops the capability to cope with the scientific revolution, for example in biotechnology and microprocessors, it will fall victim to a new kind of exploitation," the rector said.

One major exciting development in the university's revision of its structures has been the creation of the Global Learning Division which is still in the initial stages.

Its main emphasis is that dissemination of the projects should be inbuilt at the planning stage. It considers it is vitally important that the end users of a project be identified. For a project on highland-lowland interaction, for example, there would be two types of end users - decision makers and the villagers themselves.

The rector argues that the criticisms of duplication with other agencies is not valid. UNICEF is an operational agency, whilst UNESCO is an inter-governmental body, whose functions and approaches are very different from that of the university.

Apart from the multidisciplinary approach of the UNU which relies local, national and international problems to each other, the UNU as a non-governmental body can bring together scholars from different schools of thought and ideology.

deni that with the limited supplies available, it can be done again this year.

Such faith is entirely a result of effort the institute and the UNU have put into the experiment. The coordinator and research worker had to gain the villagers' confidence before they could start.

But undoubtedly in Kelagama this succeeded. On our arrival both were greeted with friendliness by the unofficial leader of the village, a young Buddhist monk, at whose house near the temple villagers congregate. Villagers were even more enthusiastic and welcomed them like long-lost relatives.

The first step in reviving collective water management was to set up a new leadership structure. They selected farmers who had various interests in the success of the experiment and had the ability to organize water management and cultivation effectively.

The area chosen for the experiment was the main Kelagama tank, one of two communally-controlled reservoirs and which provides irrigation for around 73 acres of land.

Once the leadership structure was set up, they had to ensure that enough paddy seed was available. Some farmers had done all while others were almost too well provided. Two tractors were needed for ploughing. Eventually a deal was struck to hire them from their owners who would only require payment after the harvest.

The third strand was to ensure that sufficient labour was available over a concentrated period. This led to the revival of the labour exchange system and the whole process was so effective that both lowlands and highland cultivation took place simultaneously without causing labour shortage. In effect it made use of the available labour more efficient.

As a result of the organization and management, 40 acres of land were successfully sown and reaped. At the end of the cultivation period there was still sufficient water for bathing, drinking and watering livestock. This was vital in persuading the villagers of the value of the experiment.

In addition the villagers have gained in self-confidence and self-reliance. They now know they have a means of controlling their scantest resource more effectively. When it was there they were busy repairing the sluice gate. The water is pumped up through this over the bund (bank) and into the paddy fields. They were even finishing steps to ease access to the water tank.

Perhaps the best example of this new confidence can be seen in the irrigation officer who was elected to measure the tank's water level daily. When cultivation starts he is also responsible for ensuring that each field gets its proper allocation.

His interest was further intensified after visiting Kenya. This was his first trip outside Sri Lanka to see how other farmers coped. His verdict was that farmers there could learn from Kelagama and that they did not make the best use of their water resources.

Most villagers said they believed the experiment had been worth it, and they were looking forward to repeating it when there was enough water. One dissenting voice came from the Buddhist monk who felt that dry sowing was not good enough. What was needed was more wet sowing and water, he said.

Perhaps he and other villagers who believe that wells of water lie underground will have their hopes fulfilled when Marga Institute carries out tests to see if it is worth drilling.

Thursday May 5 and Friday May 6.
Drama Department, University of Bristol.
Visit by the Nanjo-Okumura Noh
Theatre Troupe. (Who will also visit Sed-
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As a teacher and psychologist, William James was inevitably drawn into the late nineteenth-century debate about educational reform. The child had just been rediscovered and the twentieth century dedicated to it in a book by the feminist Ellen Key. Science was expected to second the humanitarian impulse and transform learning into a perpetual delight. It was Harvard itself that asked James in 1892 to give a course of lectures to the teachers of Cambridge. When he published these in 1899, he added to the 15 chapters three talks to students that deal with themes no less useful to the pedagogue, though to him the teacher part of the book was "incarnate boredom".

That teacher part naturally recapitulates facts from his *Psychology* — on the stream of consciousness, the link between mind and action, the association of ideas, the will, the laws of habit, and so on. But the great originality of *Talks to Teachers on Psychology and to Students on Some of Life's Ideals*, when it was published in 1899, was James' restrained scepticism about the "new psychology of education". "In my humble opinion, there is no 'new psychology' worthy of the name. There is nothing but the old psychology plus a little physiology of the brain and sense and theory of evolution, and even a few refinements of introspective detail, for the most part adaptation to the teacher's use."

The fundamentals that he recited in order to acquaint teachers with the ordinary workings of the mind were important, but he warned against newly raised hopes from research. "No elementary measurement capable of being performed in a laboratory can throw any light on the actual efficiency of the subject; for the vital thing about him, his emotional and moral energy, becomes known only by the total results in the long run." Since James, talking and writing about education — the parody of thought — has swallowed billions of dollars and man-hours and has misled more than it has enlightened, "Studies" by the hundred have promised wonders and fed fatalism while contradicting one another, for they assume a sort of human mind which it was James' great contribution to have shown up as contrary to fact.

James' view of the child was typically concrete. The "little sensitive, impulsive, associative and reactive organism, partly fitted and partly free, calls for the kind of teaching that respects freedom and compulsion, individuality and the claims of common reason and common action." Such a view in 1899 was enlightened and not widespread; it was not what came to be called progressive education. James knew that a child-centred school would be as bad as a teacher-centred or book-centred one. He did not fall into the trap of supposing that a child's needs are the same as his wants. He pointed out on the contrary that there is no possibility of making schoolwork always easy and attractive. Effort is always needed in maintaining the child's attention and the teacher's utmost skill in supplying interest is "to let loose the effort".

Together with concentrated advice of this kind, James uttered two warnings that nowadays teachers in training never hear. One regards what he called "the softer pedagogues" that "have taken the place of the old steep and rocky path to learning. From this lukewarm air the tracing compass of effort is left out. It is nonsense to suppose that every step in education can be interesting".

The second warning was that the small child will grow up and that the mental diet appropriate to only years will cause harm if protracted. Tender solicitude must be replaced by appeals to ambition and competition and the sense of accomplishment. Accordingly, "pupils should know their marks. Two child's eagerness to know how well he does is in the line of his normal completeness of function and should never be bulked except for very definite reasons indeed — though here as elsewhere concrete experience must prevail over psychological deduction".

This wisdom is flouted almost universally today. Instead, the jargon of psychiatry replaces the direct judgment of what a pupil has done, while his performance is short-circuited by so-called objective multiple-choice tests. In other things to be learned — reading, writing, speaking

Jacques Barzun reconsiders William James's ideas on education — ideas that were decidedly unfashionable among contemporaries

William James: "A college education . . . should help you know a good man when you see him."



Untimely advice

— little care is given to fluency and precision, which means that the operation of habit is ignored. James conceived of all education as the making of useful habits.

He had no reason to imagine that schools would turn into places where death by violence, the drug habit, rape and teenage pregnancy would count as educational problems. He and his hearers were prepared for what was then childish misbehaviour and thus to accept his advice: "Bad behaviour, from the point of view of the teacher's art, is as good as a starting point as good behaviour — in fact, often a better one."

In that last maxim, we find again James' analytic mode: we start with what is natural; it is the material to work upon; but it does not set the goal, for more than one is possible and desirable. Here lies the great difference between James' pedagogy and that derived from John Dewey, which has prevailed in American schools for most of this century and in its degraded form brought them to their present instructional paralysis. Dewey's effect on schooling was to de-throne object matter and replace it by techniques, the main one being aimed at teaching problem solving regardless of subject. On the surface, this sounds like a fulfilment of Jamesian ideas. James, too, says that the uneducated person is "one who is nonplussed by all but the most habitual situations", whereas the educated "can extricate himself from circumstances in which he is never placed, before he is left with his hands in the air". He certainly thought that education should be democratic and "fit the human being to his social and physical world". But two great differences destroy this apparent similarity. One is the role that Dewey assigned to the mind; the other is the sense of before and after.

To begin with the second, Dewey's doctrine allowed his interpreters to commit the mistake of "preposterism". Because a person who has been educated is able to cope with the unknown or unfamiliar, it does not follow that one who is being educated should be asked to do the same. That expectation is preposterous, the cart before the horse. Adaptation to life is not to be engineered in the classroom. The contrived situations fool only the teachers and undermine their authority by silly make-believe. James never wanted to abolish school subjects, though he said that their division was in some sense arbitrary.

The second difference from Dewey is related to the first. In setting the child to problem solving, Dewey assigns intelligence but a single track, that of analysis on "scientific" lines. James, as one can see on every page of his *Talks to Teachers*, understands the child's mind (and the adult's for that matter) as quite different. It is not an engine chugging in regular development; it is an artist's mind, it works by jumps of association and memory, by yielding to aesthetic lures and indulging private tastes — all in irregular beats of attention, in appa-

rent wanderings out of which some deep sense of rationality rises to consciousness. There is no formula, for the trained or the untrained. "The total mental efficiency of a man is the resultant of the working together of all his faculties. He is too complex a being of any one of them to have the casting vote. If any one of them do have the casting vote it is more likely to be the strength of the interest he takes in what is proposed." Dewey's plan is thus another piece of preposterism. From a good mind had done its work, idiosyncratically, it will no doubt submit the results to others to Dewey form. But that is no warrant for believing or requiring that the ends serve as a prescription of the means.

Dewey is not to be charged with the culpable vagaries of high progressivism in education. His ideas, good

He wanted society to avoid becoming a mass of money-grubbers and single-track professionals

and bad, were exploited by ignorant and irresponsible people — veritable Smerdyakovs — and imposed upon children, parents and teachers alike. Anything less "pragmatic" than the present ineffectiveness of public schooling would be hard to imagine. And the permissive, "relaxed", "at your own pace" mode of instruction has generated an atmosphere notably tame, and anxious and straining for "achievements", themselves indelible.

Higher education in James' day had changed. Its spots, even more completely. The American college had been topped, if not crowned by the graduate and professional schools. The physical sciences had taken over a large slice of the undergraduate curriculum and forced a new standard of intellect everywhere — specialization. Out of the bits and pieces of the college "electives" a student was supposed to educate himself and acquire or prepare for a specialty. Only two men raised their voices against the onward rush of the bandwagon: Woodrow Wilson, the president of Princeton, who maintained that the duty of a college was to "regeneralize every generation"; and William James, who in lectures and articles defined civilization in contrast to training and opposed the "PhD Octopus".

James was not battling to preserve a genteel mode of life. When he spoke of "The Social Value of the College Grad", he wanted democracy to avoid becoming a mass of money-grubbers and single-track professionals. Education should inculcate an awareness of the human order and its achievements — the humanities, which include science.

James missed no chance to decry "catalogue" — for example "The American Textbook Monolith, in whose belly living children's minds are turned to ashes, and in which the sciences are pre-digested for the teacher and for the pupil consumed

into small print and large print and paragraph headings and ex-amination questions, and every up-to-date device for frustrating the natural movement of the mind when reading and preventing that irresponsible rumination of the material in one's own way which is the soul of culture". In short, let "virgin-minded youth" read the great books. Textbooks grew out of the specialist attitude, akin to that of the feudal lord behind his moat.

James also met a paranoiac question with an answer that is often quoted as if it were only a witticism struck off in conversation. It is actually a considered statement of deep social import: "Of what use is a college training? A certain amount of meditation has brought me to this as the blindest reply which I myself can give: the best claim that a college education can possibly make on your respect, the best thing it can aspire to accomplish for you, is this: that it should help you to know a good man when you see him." The principle here is that only a developed mind can gauge the capacities that are equal to its own, or greater, or less.

It is an intuitive act, not a numerical demonstration on the basis of tests. The educated will know how to judge "sound work, slack work, sham work; precision, thoroughness and honesty." James advocated laboratory and shop work in the lower schools, to impart the concrete meaning of these terms at an early age. In adult life this authenticity is the basis of culture and it makes itself felt in a certain tone. "Tone" is to be sure a terribly vague word to use, but there is no other, and this whole meditation is over the question of tone. By their tone are all things human either lost or saved. In these words, which his brother Henry might have written — indeed wrote in both *The Sacred Fount* and *Roderick Hudson*, "I should know a great character when I see it" — we hear again the leading note, the characteristic tone, of the fastidious and exacting Jamesian mind.

The folly of the PhD Octopus lay in this lack of authenticity. With deep irony, James recounts the sad story of the brilliant Harvard graduate appointed to teach in a neighbouring college who turns out not to have a doctorate. His sponsors guarantee his merit, but that is not enough. He must write a thesis, "padded out in a certain way, and pass our formidable ordeals in subjects perhaps unrelated to his teaching". Only then could he "wipe out the stain and bring the college into proper relations with the world again".

Ever since James' day, the octopus has held American higher learning in its grip. The sham of a degree has been met only by desperate remedies and falling enrolments. Perhaps at the point where it keeps out all but millionaires it is time to stop to someone that it is time to recognize the entire mode, purpose and content of higher education.

The author is university professor emerita of Columbia. This article is adapted from his study of William James, published this spring by Harper & Row.

The resulting inflation is present: a discovery worth a footnote becomes an article; articles are blown up into books; insignificant subjects are researched and non-subjects (e.g. abstract notions derived from reading poetry or fiction) are treated at length; the same lives, events and masterpieces are rehearsed again and again under the arbitrary stencil of faddish criticism, history or psychology. Meanwhile, the standards applied to the research and the writing necessarily vary and, by Gresham's law, tend to decline, but all PhDs are equal. The holders are certified — which is indispensable when the practice of telling a good man when you see one has been abandoned.

The consequences may seem remote from society at large, but they are real. The intellectual life of the country is damaged by the diffusion of bad or polemic books: by the common distinction between written work that is genuine and that which is "academic"; by the alienation of whole publics — say, the readers of history or philosophy — through professional prose and ostentatious scorn for the layman. For the individual, as James apprehended, the PhD was the forerunner of the credential society. "Other nations suffer terribly from the Mandarin disease. Are we doomed to suffer like the rest?"

The answer can be read in the tone of "resumes" and "vitas" that are the paper currency of social war today. It is a fast-depreciating currency. Every applicant for any job requiring education is covered with labels of prestige like a globe-trotter's suitcase. The competition has got to the point where handbooks exist to teach what certificates and what previous posts are likely to impress and how to organize them into a work of convincing art. For the interviewer can hardly assess the diplomas acquired in good faith as to "quality". He is reduced to judging the skill (or rather the savvy) with which the document has been compiled.

To the end of his life, James questioned the ways of higher education. He thought that college gave "glibness and flexibility" but that it did not make citizens wiser votes. He saw, too, that for most men and women too intellectual life as such has no appeal. He therefore, like Robert Hutchins, 40 years later, favoured a three-year undergraduate course leading to the BA. "There is a deeply rooted distinction between two sorts of students. The one is born for the theoretic life and is capable of pressing forward indefinitely into its subtleties and specialities. The other class of man may be intelligent, but they are not theoretical, and their interest in most subjects reaches its saturation point when the broader results have been reached". These broader results could be imparted to secondary schools if the time spent there were not being wasted as it is now. College would then offer a combined general and special preparation leading to the several professions.

Such a change in the educational system would get rid of many difficulties in the lives of the young as well as in the working of colleges and universities. For one, the tedious debate about "the need for liberal education" and the equally distressing plans for "giving" it, would come to an end; for there would be no question of specialist scholarship in the high school so that its graduates would at least have the chance to stretch and fill their minds before entering what is to them the real world. In these days, when one meets college graduates five or six years after their degree, the striking thing is how few traces of the vaunted "breadth" and "depth" remain.

In this state of the higher learning in America, there is something bitterly comic in the aver-rising cost of college and university fees. So far these have been met only by desperate remedies and falling enrolments. Perhaps at the point where it keeps out all but millionaires it is time to stop to someone that it is time to recognize the entire mode, purpose and content of higher education.

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Interfering with viruses

D. C. Burke considers the various uses of the antiviral drug interferon

Interferon was discovered more than 25 years ago in London by Isaacs and Lindenmann. Why, after all that time, has there recently been the sudden blaze of publicity over its use as an anticancer drug, and what are the prospects for its usefulness?

Interferon is a protein, or rather a family of proteins, which inhibit the multiplication of a number of animal viruses. That is, it acts like an antibiotic against viruses. It does this by protecting the cell from the effects of virus infections, rather by directly inactivating the virus, as antibody does. Right away it was realized that interferon might be clinically useful as an antiviral agent.

Viruses, unlike bacteria, multiply inside living cells and are parasitic upon them, so that it is very difficult to stop the virus from growing without killing the cell.

A collaboration was set up in 1960 between the Medical Research Council, ICI, the Wellcome Laboratories and Glaxo Laboratories to develop this new approach. It was shown in 1962 that interferon was a successful antiviral drug in human volunteers, in a trial using vaccinia virus in the skin, used then to prevent us from contracting smallpox. The sights were then set on a trial against the common cold and influenza — real infections as opposed to the rather artificial circumstances of the first trial.

However, for a number of reasons, it turned out to be very hard to use interferon in this way. First, interferon is only normally active in cells of the species in which it is made. This meant that methods for producing interferon in human cells had to be worked out. Second, the interferon had to be purified free from any viruses or toxic materials before use. Third, because the interferon was to be sprayed up the nose, where so much is wasted, rather than injected into a small site in the skin, much more interferon was needed.

All these problems were ultimately solved but they took 11 years of work in a number of laboratories. The production of human interferon was developed by Dr Kari Cantell and his colleagues in Helsinki. They used white blood cells from the blood transfusion banks which they then treated with virus to produce interferon. Purification methods were then worked out by Dr K. Cantell, by Dr Karl Fantor working at the Wellcome Laboratories and by Dr Tom Merigan in California.

Sufficient human interferon had been made by 1973 to run a small trial against the common cold virus. The interferon was sprayed up the noses of human volunteers several times a day for two days before virus infection. The trial showed that interferon did prevent some colds, but some of the treated patients still showed cold symptoms, so that they were not all protected, and there was no more interferon. Other trials against virus infections also showed some effect — against viral hepatitis, herpes zoster, and cytomegalovirus infections — but the results were not encouraging enough for interferon to be used generally in patients.

About this time interferon began to be used against cancer. Dr Ion Gresser, in fact, had shown that in mice, interferon would prevent growth of tumours. In mice, even though some tumours can be caused by viruses, interferon was not acting here as an antiviral agent, but probably by stimulating the immune system.

Stimulated by Gresser's work, Dr Hans Sraher in Stockholm started treating patients suffering from osteogenic sarcoma with human interferon. He chose this condition because although rare, there was no other effective treatment available at that time, apart from surgery and radiation, and the patients did not live very long, even with treatment. Patients were injected with interfe-

ron for one month, then three times a week for a further 17 months. The treated patients were compared with a control group taken from the hospital records, and almost immediately it was obvious that the interferon-treated patients were doing better than the control group. This result caused world-wide interest and led to a large number of trials in Europe, the United States and Japan.

However there are two problems with the Stockholm trials. The first is that the course of the disease appears to be changing — becoming less severe, so that when the clinical progress of the interferon-treated patients was compared with control groups elsewhere in Sweden or in the United States — the difference was much less.

The second was one that is common to many clinical trials today, and that is that with a small group of patients (say up to 50) it is difficult to be sure that any difference seen between the treated and untreated groups is not due to chance. This is because of the variability of the human response coupled with the rather small improvements that we now see in clinical trials. So the outcome of the Swedish trial remains in some doubt.

Interferon was then tried against a large number of cancers with rather variable results. Against some cancers (eg lung cancer) there was clearly no effect, but against others (eg some lymphomas and breast cancer) about 20 per cent of the treated patients showed some response. This means that interferon treatment is often no better than other current treatments, but if we could find out why those 20 per cent responded and other do not, then interferon treatment would be much more useful.

These trials have generated a demand for substantial amounts of interferon, but this problem has now been solved by the application of new technology. The first generation method for making interferon has already been described; using white blood cells treated with a virus. This material after partial purification in Helsinki, was used in Stockholm, elsewhere in Europe and in the United States for many of the early trials.

Over the last three to four years it has been supplemented by the second generation method. Interferon is made in human lymphoblastoid cells by Roche/Gesellschaft in the US and by several Japanese companies. The production of human cells in large tanks (4,000 litres) of human cells, which are grown in suspension culture. These cells are then treated with virus in a batch process to release interferon which is then highly purified before use. Since this material is made in cells derived originally from a patient with cancer, the interferon has not been cleared for use in antiviral trials, but only for the anticancer trials, and it is now being used for a number of trials in Britain, Canada and Japan.

The third generation method depends on genetic engineering; first inserting the interferon gene into bacteria, and then re-sequencing the bacteria to make interferon. This process has now been successfully carried out in a number of centres. All human cells contain the interferon genes, but these genes are normally inactive; not making any interferon. When human cells are treated with viruses or double-strand ribonucleic acid, then the genes are activated; they make interferon messenger RNA which in turn is translated to make interferon.

However there are several different forms of human interferon: the material made when white blood cells are treated with viruses is mainly interferon α . Cells are treated with double-strand ribonucleic acid to make interferon β , and the material made when cells of the human immune system are treated with mitogens (substances that make cells divide) or an appropriate antigen is interferon γ . Most of the clinical trials have been carried out with human interferon α , a few with interferon β , and trials with interferon γ are just starting. We don't understand why these different genes exist — it looks as if the interferon α and β genes are derived from a common ancestor but the interferon γ gene is quite different.

As an additional complication, there are a number of genes, all differing slightly from each other, and the human interferon α made by white cells or lymphoblastoid cells is actually a mixture of at least eight proteins. This complexity obviously made the cloning into bacteria more difficult.

All the successful cloning groups have used the same strategy. Cells producing interferon contain a mixture of messenger RNA molecules, a different one for each different protein that is made, and the interferon messenger RNA makes up only 0.1–1 per cent of the total amount of messenger RNA. The mixture of messenger RNAs is turned, by use of the appropriate enzyme in DNA and the DNA is inserted into a small circular piece of DNA, called a plasmid.

The plasmids, each derived from a different messenger RNA, are then inserted into bacteria, to give a large number of individual bacteria carrying different pieces of DNA. Each in turn is grown up to yield a large number of identical bacteria, derived from a single bacterium, each containing one of the DNA copies from the original messenger RNA mixture. This process has separated into individual bacteria and increased the amount, by growth of the bacteria, of each DNA copy of the messenger RNA.

All that is now required is to test each sample of bacteria for the presence of an interferon gene, by a rather complex process that depends upon the ability of a particular gene to bind to the messenger RNA molecule that is derived from it. In this way, the genes for human interferon α , β and γ have been cloned into bacteria and the precise sequence of nucleotides in the gene determined. Once the sequence of each gene is known, then the amino acid sequence can be derived from it by use of the genetic code, and thus the structure of each protein determined.

The next step is to persuade the bacteria to use the human interferon gene they contain — by making interferon in the bacteria. The technical details are outside the scope of this article, but the problems of production in bacteria and purification of human interferon α and β have been solved by several drug companies — Schering-Plough/Bogen in Europe, by Roche/Gesellschaft in the US and by several Japanese companies.

Interferon α made by gene cloning is now being used in clinical trials in the United States, Britain and Japan but it will be some time before we know how effective it is. It is likely there is an upper limit to the amount of interferon that can be used because it causes some basically harmless and reversible physiological effects (eg headache and fever) and also some local inflammation after injection. What we need to determine is what causes the most sensitive to interferon and how best to administer the interferon.

Cloned interferon α has also been used recently in a new series of trials against the common cold virus at Salisbury. Here the side effects are much less of a problem since the interferon is sprayed up the nose rather than injected into the body. The trials so far have shown it to be effective; 42 people have received either cloned interferon α or purified interferon α made in human cells, and have then been infected with common cold virus. About 20 of these would normally have been expected to develop a cold; in fact none have.

The trials will continue against influenza virus and respiratory syncytial virus, two major causes of upper respiratory infections, to determine whether interferon is effective against them or not. It is unlikely that interferon will be able to cure cold or influenza once it has been started, but it might well be useful given before an infection — say in an epidemic. It is too soon to say definitively, but possibly interferon will fulfil its promise as an antiviral agent — using cloned interferon developed as an antitumour agent.

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Tapping the graduate bank

In the second of two articles Ray Footman continues his look at private fund-raising in American colleges

According to James L. Fisher, president of the Washington-based Council for the Advancement and Support of Education, voluntary support for higher education in the United States reached \$4,230m in 1980/81 with a record level of giving by individuals, alumni and non-alumni, contributing \$2,060m of this total.

This is less surprising when one studies the resources and effort that universities in the United States put into their development, or fund-raising activities. Stanford at Palo Alto in California, with 13,000 current students and 130,000 alumni, employs more than 160 staff in development related work and currently raises about \$80m per year — and approaching one quarter of its operating budget — from private sources, divided approximately as follows: \$20m from corporations; \$20m from foundations; \$11m from wills and bequests; \$9m from living individuals; and \$20m from major gifts. While Stanford is regarded as something of a master of the art of private fund-raising, substantial staff investment figures could be quoted for other major private universities, where the general pattern of fund-raising seems increasingly to centre on a continual annual fund-raising programme, with periodic four- or five-year special efforts also being mounted.

And if fund-raising programmes at this level can hardly be regarded as typical of the average publicly-funded North American university, similar efforts are being made by them to supplement state funding from a variety of private sources. The University of North Carolina at Chapel Hill, the oldest state university in the United States, currently having some 22,000 students, realizes about \$19m per annum in gifts, grants and bequests (nearly \$8m from alumni; \$24m from corporations; nearly \$44m from foundations; some \$12m from bequests; and, approaching \$32m from other donors and a large central development office of 22 staff).

Whatever the scale of the activity, the message is that you have to invest money to generate money and that an effective fund-raising programme takes time to build up. One development officer suggested that, for every \$100 you hoped to raise, you were likely to have to spend \$20 in the early stages, around \$10 when you had built up an established operation and that it might be feasible to get this down to \$7 or \$8 if you were operating very efficiently. In line with this approach, the employment of highly professional staff with special fund-raising skills is regarded as an essential.

Fund-raising among alumni, or graduates, is seen to depend in good measure on the institution's past success in encouraging the identification, communications, services and records systems to which I referred last week, although there is a divergence of view and practice between universities in the extent to which alumni associations should be directly involved in soliciting contributions. Some alumni directors prefer to establish a framework in which it is clear that communications to graduates are not invariably accompanied by requests for financial support; others operate on the assumption that graduates in fact expect to be solicited in this way and that a rigid divorce between fund-raising and fund-raising functions is not realistic. Even in those universities, however, where alumni associations are principally information and social organizations, attention is drawn to the need for close collaboration between their officers and professional development staff in, for example, the maintenance of records and coordination of communications.

The most common continuous form of fund-raising among alumni is the "annual giving programme", where regular contributions are solicited from among graduates, in the first instance through mass mailings. McGill University, in Montreal, began its annual approach to alumni

the "Alma Mater Fund" in 1948, when nearly 3,000 donors from almost 17,000 graduates gave some \$77,000. While the annual response rate has varied from an initial 17 per cent to a high of 45 per cent in the mid-1960s, in recent years it has held steady at around 25 per cent and currently yields a rising total of about \$1,896,000 (in 1981/82), with gifts averaging just over \$100 per contributing graduate (nearly \$20m in total since the programme began).

The mailing operation carried out by many universities for their annual giving approach is often a highly sophisticated one in terms of the mechanics, the thought which is given to the form of solicitation cards, and the arrangements made for acknowledging gifts at varying levels. Increasingly, fund-raising offices are using "phonathons", strategically placed within the mailing timetable.

While much effort is devoted among development staff to increasing the proportion of graduates who contribute to university funds through "annual giving", one of the most interesting within that group is identifying wealthy individuals who have a high giving potential, in whom a special, individual means of approach may be employed. A number of means are used to encourage donations for among such groups and then to attempt to continue that pattern of giving.

Clearly the tax structure in North America is not irrelevant to either the scope or scale of graduate and other philanthropy towards university institutions, when one-off contributions to university funds can be set against tax liability. An additional stimulus is provided in North America by the matching gifts programme under which graduates may also encourage their own firms to match, dollar for dollar, (or qualifying for tax relief) any contribution they may make to their alma mater. Annual giving from among graduates may also be stimulated in some universities which have a highly developed class reunion system, where particular classes may vie with one another to establish record giving totals on the occasion of their major 25th or 50th reunions. At Harvard the last 25-year reunion raised more than \$2m.

In most institutions the principal aim of annual giving seems to be the raising of uncommitted funds which enable the university to apply them to current operating expenditure. Provision is often also made, however, in recognition that some graduates will have a particular allegiance to certain university activities or academic disciplines, for part of all of their gift to be designated to a specific or general area if they so wish. And while \$1m a year raised from alumni giving may not be a very high percentage of the total income of a major university like British Columbia at Vancouver, it does help to provide that vital margin.

Given the lack of a strong tradition of continuing graduate contact among most universities this side of the Atlantic, there is undoubtedly scope for improvement, both in patterns of communication and in building up financial support programmes. This is not something, however, which in most cases is likely to be remedied either overnight or without pump-priming funds in the early years. Even acknowledging the differences in social and political attitudes between overseas and the North American and recognizing it would be mistaken to assume that patterns of activities established overseas can simply be transposed to a British environment, my own experience within the British university system and most recently, and briefly, of what applies in North America, leads me to the conclusion that we all ought to make greater efforts.

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BOOKS

The survival of the past

by W. H. Walsh

On History and Other Essays
by Michael Oakshott
Blackwell, £12.00
ISBN 0 631 13114 0

The greater part of Professor Oakshott's new book is taken up with discussion of the nature of history; this is the third time the author has addressed himself to this topic at length.

His first attempt was made as long as fifty years ago in *Experience and its Modes*. Oakshott there sought to investigate what he called "the general character of experience", ie to specify the properties that would be possessed by an experience which was intelligible through and through, and then to consider in the light of the results certain common ways of taking experience, with a view both to making their differences clear and to determining their ultimate intelligibility. History, science and "practical" were the candidates examined, and though each turned out to be a distinctive and irreducible way of thinking about the world, none was found to be more than a "mode" or "arrest" of experience; all fell short of philosophical truth. At the time the book was seen, not unreasonably, as a metaphysical essay in the Hegelian mode, comparable to Collingwood's early work *Spectrum of Mind*. In fact its interest has proved to be quite different: it is not the metaphysics (on which Oakshott has had no more to say) that continues to attract attention, but the detailed treatment of the particular "modes".

The chapter on history has deservedly been studied most. At the centre of it is Oakshott's insistence on the sharp difference between the past as conceived for purposes of practical life and the past as conceived in history proper. The practical past connects closely with our hopes and fears, our projects and our need to get on in the world; it is a past that can be said to be alive since it bears so evidently on the present. But the attitude of the true historian towards the past whose details it is his job to investigate is wholly different. The historical past is over and done with; it can neither menace nor console us, but only await our inquiry. An object of this kind deserves neither our censure nor our praise, nor can its investigation afford us any lessons. Inquiry into it can only be disinterested: if we find out about it, it must be for its own sake.

History as delineated in this discussion turned out to have an austere purity which Oakshott admitted was not always to be found in the writings of actual historians who too often were often seduced by ideas belonging properly to other modes of experience. The idea of cause, for instance. What we find in history books could well be a hybrid; the important thing, however, was to get the nature of true history clear. The conception of history sketched here has remained central in its author's thought; later discussions have not so much amended as lent it depth.

Another set of differences which concerned Oakshott in *Experience and its Modes* was that between history and science. The two were alike in their attitude to their object, but diverged in so far as history considered individual happenings where science dealt with instances. It was hence a mistake of principle to try to understand historical events by bringing them under general laws of the scientific type; it was a mistake, again, to borrow concepts from science with a view to elucidating particular historical episodes. Historical explanation must be wholly different from scientific explanation; a contention Oakshott tried to make good by filling in details. These themes too have remained prominent in Oakshott's later treatments of the subject.

More than twenty years after his first book Oakshott produced a brilliant essay entitled "The Activity of being an Historian" in which he restated his main contentions about history without saying anything about its metaphysical status. The contrast between the practical and historical pasts was reiterated, its consequences being pointed up vividly in a long list of typical sentences and expressions which, Oakshott said, could not be permitted in history proper. Many historians must have rubbed their eyes on seeing the list, since it contained not only phrases like "the evolution of Parliament" and "the development of industrial society in Great Britain", but also "The Pope's intervention changed the course of events" and "The effect of the Boer War was to make clear the necessity for radical reform in the British Army". Oakshott argued that to attempt when writing history to treat what happened as a series of projects, long or short-term, successful or the reverse, was to lapse into the practical attitude, which was wholly foreign to history. But he did not explain at this stage how it was that history could be possible at all. Aristotle said that history was what Alcibiades did and suffered; what Alcibiades did was to enter on a series of projects, mention of which seems unavoidable if we are to give an account of his times. So though we can forego indulging in moral approval or disapproval of such an individual, and may agree that it is not our business as historians to draw any lesson from study of his career, we cannot avoid all practical ways of thought when we turn our attention to him. We shall need in such a history to speak of actions and their results, of men in their capacity as agents, making plans, meeting opposition and trying to counter it, succeeding, failing. And that seems to make the Pope's intervention, admissible after all.

It is at this point that Oakshott takes up the discussion in his new book. His point of departure is once more the opposition of the two sorts of past, which he seeks to illuminate further by exploring the relations each has to its own distinctive kind of present. The present of the practical man is one which essentially looks to the future; material of any kind is relevant to it as it bears on what is to be done or avoided. It follows that the past for practical men is not treated as a past at all; its being or its not being is as if it were purely mythical. For a true past we need to turn to history proper, which begins from a particular present and is concerned with it only for what it reveals of former happenings and states of affairs.

The historian's present is a series of utterances or productions of (mostly) long-dead human beings; what he does is treat these as "cases" or instances of a past which has "survived". It is not his business, as Dilthey and Collingwood claimed, to argue from "expressions" to the thought to which they gave body; he is not directly concerned with men's purposes and actions at all, but, rather, with the course of events that came about without anyone intending it, as a result of the "engagements" of different individuals. "Performances" or "performative utterances" bear witness to what happened, but are not to be seen as versions of what happened, even when they take the form of direct reports. They are useful not for what they may explicitly claim, but for what they reveal or let slip. They could not be useful as reports, since the historian has to determine what truly happened, and this is something no contemporary could have witnessed. It is the inference seems to be, only in the context of the historian's thought, as "what the evidence obliges us to believe" to use an earlier phrase of Oakshott's. That historical facts have no substantial being of their own is, if this is correct, something Oakshott has retained from his

Idealist past. But it is clear that in other respects he dissociates himself entirely from the malis commonplaces of Idealist philosophy of history, certainly from the emphasis on action and thought and perhaps even from the claim that historical reflection involves a special kind of understanding.

Can we believe this account? It depends on the first place on what Oakshott means by "historical event". It emerges at one stage that no sharp line is being drawn between events and situations; attention to "survivals" of the kind described enables us first to infer something about past conditions which obtained in the past and then to establish the occurrence of certain changes in those conditions. What a situation is - whether it involves or could involve persons in an active capacity - is here left obscure. But the crucial question to ask is whether "event" in Oakshott's vocabulary could also cover action. The answer seems to be that it could not. History, we learn, is concerned with "the unintended eventual by-products" of "transactional engagements" which are not themselves "assignable performances"; action and agents come into it, but only peripherally, as precipitants of what came about. To try to understand history in terms of the purposes, motives and intentions of particular individuals is accordingly a mistake.

The claim is clear and challenging, but for all that difficult to accept. When the historian comes to write history in this difficult mode, will he mention the "transactional engagements" of which the events he wants to get at are the precipitate? Will he not have to mention them if he is to give anything like a full account? And will not a reference to them involve undertaking some estimate of their effect, ie of the contribution the different parties made to the outcome, an estimate required not for extraneous practical purposes, but for the sake of historical truth? Or is it that we know in advance that no such agent can succeed in achieving anything of what he intended, that everything in history comes about inadvertently? To maintain that Oakshott is convinced that to think of events as resulting from vast impersonal forces is quite unhistorical. But it is not quite unhistorical to deny that they are ever the direct product of human wills?

What is most puzzling about Oakshott's history is its lack of human interest. The comment would not worry Oakshott, since from the first he has insisted on the distinctness of the different modes. Interest is a concept belonging to practice; it has nothing to do with science or history or for that matter art. Yet the pursuit of knowledge itself, including the pursuit of knowledge for its own sake, is a practical activity; those who engage in it are motivated for devoting themselves to the task. Could sheer curiosity or sheer love of knowledge provide such a motive? It seems altogether more plausible to say that historical studies are sustained by an abiding interest in their results, in so far as these bear on the fortunes and vicissitudes of mankind. Curiosity and the love of knowledge come into it, but it is curiously about the projects, successes and failures of men like ourselves. The fact that we are occupied with moves which we do not see as moves, need not prevent our investigating them impartially. If we try we can avoid the partiality apparent relevant to ourselves and consider it as an independent object. Oakshott is quite right to insist that this is the historical attitude proper. But he is wrong to add that this is all the historian can properly be concerned with. After I have established such truth about the past as I can, can I use it for many purposes - to reflect on the triumphs and failures of the human species, to pronounce on what it was like to be alive in past times, to find out something about



Michael Oakshott

myself and the age in which I live. As well as considering the historical activity of recovering or rather discovering the true course of events, Oakshott has much to say about their connections. His remarks on this head follow naturally on the discussions of historical causation to be found in his earlier work, especially *Experience and its Modes*. There he declared roundly that the concept of cause was out of place in history; here he acknowledges that the word "cause" is an ineliminable part of the historian's vocabulary, but still refuses to take it with seriousness. Historians lo practice can make no use of either practical or scientific causation, or, since for them a cause is something temporally separated from its effect, can they invoke any Aristotelian concept of cause. In general, "the word 'cause' in historical discourse is commonly a loose, insignificant expression". Oakshott does not propose to transform it into something better. But he does emphasize the historian's concern with what he calls "significant" relationships between events and tries to show how, in establishing such a relationship, we start not with an event which is fully understood and of which we seek the causal antecedents, but rather from a position in which full understanding is still to seek. By picking out an element in a preceding situation and relating our object more to it, we hope to throw more light on the object itself. To come to understand it better, the relationship is "significant" in a circumstantial and apparently contingent way. There is a good deal here which requires further clarification: talk about an historical event being "a constellation of accessories" which are the difference they made in a convergence of differences which constitute a circumstantial historical identity does not help very much.

Yet though Oakshott in the final part of his study falls below his customary lucidity (the remarks about continuity in history near the end are also rather obscure), it is clear that here too he is full of interesting and unusual ideas. It is safe to predict that these essays, along with his earlier writings on the subject, will be read by philosophers and theorists of history for many years to come. They are the product of a powerful, subtle and independent thinker, a writer of charm and elegance, one who, as his incidental references show, is a man of wide culture. Conservative in their general effect - Maitland remains Oakshott's near ideal historian, and there is only a single reference to "so-called cliometrics" - they are nevertheless radical in detail. They constitute what is far and away the most stimulating, if not always the most persuasive, treatment of their subject in English.

It should be added that the book contains not only this extended study of "the logic of historical inquiry" (Oakshott's own term), but also a lively and uncompromising essay on the rule of law, notable for the attention with which it circumscribes the proper use of that term and then for the story of the Tower of Babel, already given wider circulation by being printed in part in *The Times*. Disappointingly, the author does not tell us whether this is to be taken as a history, a work of art or a contribution to practical discourse. But, like the rest of the book, it is a pleasure to read in any case.

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BOOKS

Zimbabwe drama

Under the Skin: the death of white Rhodesia
by David Caute
Allen Lane, £14.95
ISBN 0 7139 1357 6

Tuesday, March 4, 1980 marked the end of the world for most white Rhodesians. The unthinkable had happened: Robert Mugabe, the Marxist terrorist, had swept to victory with an absolute majority of seats, Nkomo's support was virtually confined to Matabeleland, Muzorewa had been trounced and Sithole confined to political oblivion.

At the end of a long, bloody and bitter struggle, the white military forces could boast that they had not lost a single battle, but they had certainly lost the hearts and minds of the majority of Africans to "the boys in the bush". Most whites, and perhaps more crucially the South African and British governments, were caught off-guard, for they ever expected Zanu-Patriotic Front to gain an outright political victory. To some extent Rhodesian whites were victims of their own war propaganda, but, more fundamentally, they were the products of a colonial culture that regarded it as self-evident that Africans were incapable of emulating the "civilized" political behaviour of the white man.

It is the nature of this mentality that David Caute sets out to explore in his brilliant and tragic study of the last few years of the guerrilla war. The book consists of five sections each representing a single year during the period 1976 to 1980. Interviews with farmers, housewives, politicians, missionaries and soldiers are interspersed with a narrative of the war itself. We are constantly reminded of the ever-mounting toll of death and destruction as the war of attrition grinds on. Although Caute's sympathies lie unequivocally with the guerrillas, he is far too perceptive an observer to see the issues simply in terms of black and white. Afriotes are committed by both sides: the carnage in the Zambian camps at Nyadzanga and Chimoio; the Elin massacre of missionaries and their children; the destruction of the *Humayni* and the *Ummah* by surface-to-air missiles, being some of the more grisly episodes in a savage civil war.

It is in the story portraits of ordinary individuals, and the authentic reporting of their rationalizations, that the author's skill as a newspaper correspondent and as a novelist is most evident. A wealthy tobacco farmer, convinced himself that he cannot afford to pay his African workers wages above the poverty line. The reasons are set out without comment, but at the end of this litany of excuses, Caute casually mentions that the farmer's accountant has just advised him to buy a private aeroplane. We are left to draw our own conclusions. There are the familiar portraits of the white housewives, forever grumbling about their lazy and stupid servants, but never guilty man-aging to dispense with their services. As Caute observes, these women are impossible to parody - "For decades boyfriends have been fascinated by memsahibs, but memsahibs and their daughters don't seem to read the novels and their performance remains unadorned by a modicum of self-awareness".

However, it is not simply unthinking white racism that falls victim to Caute's satirical pen; missionaries, white liberals, politicians of all colours and persuasions, even foreign correspondents are exposed for their self-serving actions and hypocrisy. Only Garfield Todd, his wife Grace, and daughter Judith (to whom the book is dedicated) emerge virtually unscathed. Grim though the story is, the narrative does not ignore individual acts of courage and heroism, nor does it neglect moments of humour and farce. There is the odd preamble of "women in flowered dresses carrying sub-machine guns to the toilet", and a whole gallery of comic and absurd characters. Sister

Janice McLaughlin, the American-born missionary who was deported in 1977 for sympathizing with the insurgents, captured in the following thumbnail sketch: "a swinging revolutionary nun with all the awful verve of a college cheerleader - Black Africa was her team."

Rhodesian Front politicians get the expected treatment, but so too do most of the African political leaders. Muzorewa, "the Bish", is dismissed as a "clown". Sithole is a flagrant opportunist, and there is an instructive comparison between the personalities of that "incongruous pair", Nkomo and Mugabe. It is in this final subject, so crucial for subsequent events, that one wishes the author had explored in greater detail, though his more to do with the future of Zimbabwe than the death of white Rhodesia. This is not a scholarly history of the independence struggle, but an excellent journalistic account of the war that captures the "feel" of the drama and penetrates the minds of many of the actors involved in it. It shares something of the quality of Toqueville's writings on the political upheavals in nineteenth-century France. However, the day-to-day account of revolution in the streets of Paris, rather than the *Ancien Régime* in the *Révolution*, the meticulously researched analysis of the origins of revolutionary change, that this book more nearly resembles.

It would be tempting to suggest that *Under the Skin* should be compulsory reading for all white living south of the Limpopo. But if this account of the final years of Rhodesia is at all accurate it is unlikely that many whites in South Africa would ever appreciate its real message. This is because, to paraphrase the author, they "live in a world they know well, but understand not at all".

John Stone

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Maurras under fire

Nationalism, Positivism and Catholicism: the politics of Charles Maurras and French Catholics, 1890-1914
by Michael Sutton
Cambridge University Press, £25.00
ISBN 0 521 22868 9

This intelligent and agreeably-written book is not what its subtitle might lead most readers to expect. It is about ideas rather than politics, and is primarily concerned with the controversies between Charles Maurras and two Catholic philosophers, Maurice Blondel and Lucien Laberthonnière.

Politics are present as an important influence on the course of the debate, in that Maurras successfully exploited the Dreyfus crisis and its anticlerical aftermath as a means of obtaining allies and adherents among the Catholic clergy and committed laity. But the main protagonists are concepts rather than groups, and the battle is fought amid the dark-green austerity of desk-top and study lamp. This is not the world of Maurras, the day-to-day journalist, pouring out vituperation on the Jews and the Republic, even if this latter ego is always at hand to provide the cutting edge to his incisive rejoinders.

However repugnant one may find Maurras's premises and conclusions, it is hard not to feel a sneaking admiration for the remorseless logic that links them - and for the pungent self-serving actions and hypocrisy. Only Garfield Todd, his wife Grace, and daughter Judith (to whom the book is dedicated) emerge virtually unscathed. Grim though the story is, the narrative does not ignore individual acts of courage and heroism, nor does it neglect moments of humour and farce. There is the odd preamble of "women in flowered dresses carrying sub-machine guns to the toilet", and a whole gallery of comic and absurd characters. Sister

1857 "Comte delegated one of his disciples... to negotiate... an alliance between Positivism and the Rule of the Jesuits against Deism. Protestantism and other forms of modern anarchy... to cite Maurras's own account, Maurras saw himself as figuratively renewing the offer when he sought to enlist the Church in his campaign to establish a social discipline, enshrined in the nation, and opposed to what he saw as the destructive individualism of Protestantism, Judaism and Romanticism. It was the hierarchical authority of the Church that had preserved the precious principles of the Graeco-Roman world and had ensured "that the disciplined people of the south of Europe have hardly known these turbulent Oriental wars [scripture] other than when... transacted by the Church".

Blondel and Laberthonnière warned Catholics against the dangers of accepting Maurras as an ally against an anticlerical government, and demonstrated the gulf that separated Maurras's thought from that of the Church. Dr Sutton's main purpose is to lay bare the intellectual foundations of this debate and show the influence of contemporary events on the way churchmen responded to this warning in the years before the First World War. The ecclesiastical politics that led to the eventual papal condemnation of Action Française lie outside his brief, although he does indicate the main outline to the concluding sections of the book. It is hard to do justice here to the perception and thoroughness with which he analyses these issues, several of which involve an extended consideration of Church thinkers of earlier centuries. A matter for serious regret is the omission of a bibliography - which imposes on the reader the time-consuming task of working backwards through pages of copious notes every time he wishes to locate a source's full title or date of publication. This is all the more surprising in a book that treats a fairly circumscribed subject in such detail and is not afraid to repeat its main points at some length.

In these days of cautious publishing, it is refreshing to read a book which presents a debate of this kind in all its fullness and without seeking to force a contemporary "relevance". It is the type of publication that one used to associate with the older firms of the *sixième arrondissement*; and for all the English elegance of its style and presentation, its character nostalgically evokes the rasp of the paper-knife and the distant tolling of St. Sulpice.

Maurice Larkin

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Looking good

Modern Germany: society, economy and politics in the twentieth century by V. R. Berghahn
Cambridge University Press, £20.00 and £6.95
ISBN 0 521 23185 X and 29859 8

Fifty years after Hitler's accession to power, it is not surprising that people are asking whether history could repeat itself: might Germany relapse into extremism in the face of present socio-economic difficulties? Professor Berghahn's excellent survey of German society, politics and economics in the twentieth century is distinctly encouraging on this point: he believes that the political culture of Germany - both East and West - has changed so profoundly since the Second World War that, for all their failings, these two societies should be able to weather any foreseeable social or economic crisis. As far as West Germany is concerned, Berghahn's conclusions about the extent of social and political change are much more positive than were Ralf Dahrendorf's twenty years ago in *Society and Democracy in Germany*. In the first chapter Berghahn analyses Dahrendorf's thesis that Wilhelmine Germany's social and political systems were destabilized

from "below" as a result of the very rapid industrialization and demographic growth between 1870 and 1914. The stronger the Social Democrats (SPD) became, the more the old Prussian alliance between Junkers, industrialists and (increasingly) the middle classes felt itself threatened. As this alliance was quite unwilling to concede any real political power to the SPD, and the SPD had become the largest party in the Reichstag by 1912, the choice seemed to be between civil war at home or a quick "scapegoat" war abroad which would consolidate the power of the traditional elites, at least for the foreseeable future. Thus, "by 1913 the question of civil war and foreign war had indeed become two sides of the same coin in the minds of the Kaiser and his advisers, and it is virtually impossible to decide which obsessed them more" (page 36).

Well, of course, the Great War destroyed, instead of consolidating, the Kaiser's system. Berghahn laments that, once again, but quite rightly, the old myth that the home front betrayed the army. On the contrary it was the military-dominated government which put such impossible strains on Germany that both fronts collapsed. However, they collapsed in such a way that the soldiers were able to pass the buck on to the liberal-democratic politicians of the Weimar Republic, who then had to accept responsibility for what, with the hindsight of history, was clearly a very unwise peace treaty. The Right never accepted the Versailles *Diktat*, and as a result Weimar was "undermined" from the beginning. Thus, as Berghahn emphasizes, foreign policy in the interwar years, as in the pre-war years, was inextricably bound up with domestic policy. Hitler was, of course, able to exploit the economic crisis of 1929-32, but the underlying reason for the Nazi *Machtergreifung* was, he concludes, sociopolitical rather than economic. Widespread resentment against the Republic from among almost all classes except the working class (which unfortunately

was divided between Socialists and Communists) was what undermined Weimar. Something like one third of the members of the Nazi Party were working class, yet the industrial working class, even at the crisis elections of 1932 and 1933, was never seduced en masse by the NSDAP.

This conclusion is significant for post-war Germany. For if the working classes rejected Nazism in the severe economic crisis of 1933, it seems unlikely that they would fall for panaceas in any recession of today when governments have at least become much more sophisticated in alleviating the hardships of unemployment.

The very considerable economic success of both Germanies (particularly West) is of course well known, and has undoubtedly contributed to its regime's stability. But also of great importance, as Berghahn emphasizes, was the *Ökopolitik* of a decade ago. For the various Eastern Treaties of that period indicated that "scapegoat" foreign policy (so important before the two World Wars) had finally been abandoned. And the willingness of the Germans to accept that a severe price had to be paid for Hitler, and that foreign policy "dreams" had to be abandoned, was evidence of relatively stable and integrated societies on both sides of the Iron Curtain. The "German problem" may not have been finally resolved, but it no longer seems to be potentially explosive. Profound changes in social and political attitudes, and an acceptance of past and present realities, are at the heart of this more promising situation.

Berghahn discusses Germany's political and social changes of the twentieth century with great skill and literacy in a book which can be recommended without reservation.

R. E. M. Irving

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BOOKS

The poet's voice

George Herbert: the critical heritage edited by C. A. Patrides. Routledge & Kegan Paul, £25.00. ISBN 0 7100 9240 7. Henry Vaughan: the unfolding vision by Jonathan F. S. Post. Princeton University Press, £16.80. ISBN 0 691 06527 6. Casly Monuments: representations of the self in George Herbert's poetry by Barbara Losh Hurman. Harvard University Press, £12.25. ISBN 0 674 17465 8.

The Critical Heritage Series adds George Herbert to its now substantial list, judiciously edited by C. A. Patrides. Herbert is a particularly, even uniquely, interesting subject for this kind of exercise, partly because of the many fluctuations in his poetic reputation and partly because of his special status, reflected in Isaac Walton's hagiography (reprinted here in full), as pious divine.

The collection, representing some 75 authors, provides a comprehensive, useful and fascinating survey of the varied responses to Herbert. Patrides's Introduction, a masterly summary and guide through the material offered, tells the story of Herbert's critical heritage with such lucidity and wealth of annotation (148 full footnotes) as to be in danger of rendering redundant the texts that follow. Appendices contain several seventeenth-century musical settings of Herbert's lyrics, and some examples of Wesleyan and other adaptations of Herbert's "Verbe".

The vast majority of the extracts are in prose (there are some commendatory verses), and it would seem that Patrides is safe enough in his claim that Walton's *Life* is "the one literary masterpiece within the canon of Herbert's critical fortunes". Yet one of the most crucial and interesting aspects of Herbert's heritage, the relationship between Herbert and Henry Vaughan, also generative of literary masterpieces, proves impossible to indicate in such a format. Since Vaughan's poetry cannot be quoted at length, the best that can be done is to indicate the situation and include an extract from the preface to *Silken Scabbards*.

Modern criticism has vindicated Vaughan (just as it has, in a sense, rescued Herbert), and the complex relationship between them forms a large part of Jonathan Post's fine study. It underscores the importance of Herbert to Vaughan, but amply demonstrates how though "Herbert might have been the catalyst in Vaughan's poetic career... as a pivotal force, he shaped rather than overwhelmed or displaced the Welsh poet's creative energies".

Impressively deploying the old-fashioned methods of historical scholarship and intertextual criticism, Post explores the poetics as well as the biography of Vaughan's conversion, and considers how Vaughan, in order to "match" his master, incorporated into his work the figure of the regenerative poet who was also a self-confirmed successor to Herbert in a Church that had been driven underground. The final section on *Silken Scabbards* is the study of Vaughan's apocalyptic sense of the invading darkness, this "Late and Dark" age, predicted by his master. *Silken Scabbards* is the principal concern of the book, but it also reassesses Vaughan's entire literary career. The study is critically acute, historically and circumstantially detailed (one is made very aware of Vaughan's own time and place), and draws on an impressive knowledge of seventeenth-century poetics. It is a rewarding book which, without making extravagant claims, everywhere enhances its subject.

Barbara Hurman's *Casly Monuments* takes its title from George Herbert Palmer's devotional, multi-volume edition of Herbert in 1905. In character, the book is polemical; critically, it is the engrossed application of an insight: that the impulse towards self-representation in Her-



George Herbert

bert is strong but problematic, and that it is not strictly the self which is projected but only that part of the self that can be made manifest in writing. Self-representation is offered but is thwarted or re-designed in various ways, poems of (or representing) the self in the very process of dismantling those representations.

For instance, the speaker in "The Collar" offers a retrospective view and then denies his identity with it at the end; "Misericordia" tells a story, but

Where rhetoric ends

French Literary Theory Today: a reader edited by Tzvetan Todorov. Cambridge University Press, £19.50 and £5.95. ISBN 0 521 23036 5 and 29777 X. *Theories of the Symbol* by Tzvetan Todorov translated by Catherine Porter. Blackwell, £15.00. ISBN 0 631 20511 5.

Tzvetan Todorov is a leading French literary theorist, working out of the Centre National de la Recherche Scientifique in Paris. The author of nearly a dozen critical works, he is best known to the English speaking world through the translations of his *Poétique de la Prose* and *Introduction à la littérature fantastique*. In his introduction to *French Literary Theory Today*, Todorov provides a clear account of the assumptions governing the kind of research which goes on under the name "literary theory" or "poetics". The domain of poetics is constituted by three kinds of choice, and develops from three types of opposition. First, poetics is opposed to interpretation or criticism, which is concerned with individual works of literature. The object of poetics is the general laws which govern the functioning of literature. Secondly, poetics is concerned with the verbal structures of the literary text, or discourse, apart from the process by which it is produced or received. Finally, the object of poetics is constituted by literary discourse, as opposed to other types of discourse. Poetics, then, is a structuralist inspired project to construct a value-free science of literature.

All of the contributors to Todorov's anthology hold to something like this account of poetics. The reader is thus introduced to a sampler, as such it does not pretend to either thematic unity or completeness. It presents a useful cross-section of the kind of poetics theory produced in France between 1965 and 1978, with contributions from nearly all the leading practitioners. Particularly well welcomed are the translations of Barthes' "A theory of the figure" and Philippe Lejeune's "The autobiographical contract".

Set against the background of contemporary poetics, *Theories of the Symbol* looks to be something of a departure since it is an historical and critical essay which, as the plural in-

the author does not resist until the conclusion that he is its subject; the voice in "The Reprisal" claims it has no tale to tell and then disclaims the disclaimer; the "Jordan" poems make use of a language they also reject; or there are typological poems which rewrite personal stories as biblical stories: "the story of others rather than the story of the self".

Drawing on recent theoretical work diagnosing our own loss of the subject and the instability of all representation and narration (Foucault, Said, Arendt and Benjamin weave through the text), Harman may make us aware of the odd congruence between the problems she locates in Herbert's poetry and contemporary theory. But we are also conscious of a repetitious tenacity, even stridency, insisting that it really is there, and isn't just being made up by the clever critic. The study, for all the pleasure of discovery it is eager to offer (and at times delivers), also generates a disturbing uncertainty about what, or who, the book is for.

Oddly, there is no mention of A. D. Nuttall's study, *Overheard by God*, very relevant, one would have thought, to what Harman is arguing, particularly on the paradoxical competition evident in Herbert's poetry between personal writing and divine appropriation.

R. D. Bedford

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its title indicates, does not attempt to produce a theory which would explain the laws governing symbolic phenomena. The need for a departure from the orthodox poetic programme is something demanded by symbolic phenomena themselves since they are not restrictedly literary in character. Today, the problem raised by symbolism is studied in psychoanalytic theory, anthropology, and linguistics as well as by literary theory. It is not surprising, then, that Todorov thinks the third defining feature of poetics, viz. that its object is all but irrelevant, and that he takes his object of study to be over-determined or deviant discourse. Tracing the restriction of symbolism to literature and then tracking down its current dispersion in non-literary disciplines forms a central part of the story Todorov is offering.

As a first approximation, one might hazard that the project of *Theories* is to delimit the boundaries, and thus the domain, of the symbolic by means of a critical cataloguing of the oppositions which have historical and theoretically defined it.

Theories' scope is enormous, and thus one can only hint at its argument through a summary of its contents. Following an account of the birth of semiotics in Augustin's *On Christian Doctrine*, according to Todorov the first work to locate rhetoric within a general theory of the sign, chapters two to five provide an extended discussion of the history and theories of classical rhetoric. Rhetoric, of course, began as an art of persuasion; it concerned not utterances as such, but speech acts, and thus eloquence as effective speech. Efficacious speech, however, only has a point in a democracy. As democracy gives way to monarchy in the Roman world, so the meaning of rhetoric alters as the best speech comes to be the one judged beautiful. From being a study of the means to certain ends, rhetoric becomes equated with the study of the "form", as opposed to the matter or content, of a discourse. Among the Romans a discourse which could be appreciated for its form alone was what we today call literature. Thus the ground was laid for rhetoric becoming a study of tropes and figures. Rhetoric began to end with the rise of the bourgeoisie and thus the collapse of a world-view which posited absolute norms and universal values. Rhetoric is no longer possible in a world that takes "the plurality of norms as a norm itself". For in such an egalitarian world figures can no longer be marked as deviations from the norm. After tracing the autonomy of beauty and literature in the rhetorical tradition, the theory of art, Todorov persuasively argues that aesthetics, in its modern conception, begins precisely where rhetoric ends. He then

er contends, that this substitution of aesthetics for rhetoric coincides with the passage from classical to romantic.

Chapter six, "The Romantic Crisis", is the centre-piece of this work. Todorov begins here by eliciting from the German Romantics, beginning provocatively with Karl Philipp Moritz, a conceptual characterization of the aesthetic object. He then goes on to show how these familiar characterizations of the aesthetic object, for example, as a produced, autonomous totality incapable of being completely discursively analysed, come to define the symbol in opposition to allegory. This leads Todorov to suggest that, in the last analysis, the entire romantic aesthetic can be treated as a semiotic theory.

Chapters seven to ten provide a modern counterpart to the passage traced in the first six chapters; however, to these chapters the movement is across disciplines rather than through history. Chapter seven offers a critique of Lévy-Bruhl's account of the "primitive mentality". For Todorov what others designate as our primitive past is a projection of our implicit knowledge of the symbol which it exists in the present. In the original version of *Theories* chapter eight provided a detailed analysis of Freud's topology together with an argument claiming that his greatest contribution to the study of the symbol is in the area of interpretation. The translation, under the author's direction, has eliminated the discussion of Freud's topology, and an appendix entitled "Freud on Enonciation", leaving an elliptical eight pages of argument. Saussure's account of glossology forms the object of chapter nine, with the final chapter devoted to a brief appreciation of Roman Jakobson's poetic project.

In some of Todorov's discussions, most notably in this account of Lévy-Bruhl and Jakobson, the structural conception of language as an oppositionally structured, autonomous object, obligatorily surfaces. This leads to a corresponding occlusion of the social and historical parameters of symbolic activity. Todorov, then, does appear to believe that the symbolic can be considered apart from its conditions of productive and reception.

This is, as I understand it, the first volume of a diptych on symbolism, the second volume *Symbolism and Interpretation*, is in the process of being translated. It will be interesting to see how a poetics of the symbol fares in the domain of interpretation, where the production and receptive features of linguistic activity come to the fore.

Jay Bernstein

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Personal stories

Ding Ling's Fiction: Ideology and narrative in modern Chinese literature.

By Yi-ti Mei Feuerwerker. Harvard University Press, £16.00. ISBN 0 674 20765 3.

If Ding Ling's name rings a bell, it will recall a Chinese woman writer on whose head the Party called down its thunderbolts in 1957 as much for her less than pious political past as for her "anti-Party" intellectualism, and who was reported suicided thereafter only cleaning the proverbial lavatory except when she was presumed dead during the Cultural Revolution. Fortunately she survived, and is back with us. But for the western reader, any familiarity with her name and Yi-ti Mei Feuerwerker will have little acquaintance to build on. Furthermore, she has chosen to write about Ding Ling's fiction, which many fewer than those who know of her have found a way to hold. Still, attention of an audience far broader than that of the new Chinese hands. First, contending how her protagonists with the work of literature, does not preclude consideration for the environment in which it is produced, particularly the immediate

personal one. Not to reveal that Ding Ling's early stories of the female fascists of young females adrift in the cities reflected her own experiences as one such girl from the provinces in the 1920s would be a form of self-denial that Feuerwerker evidently does not believe in. All the works discussed are in fact related to the author's personal history, and more broadly to succeeding literary trends, briefly but cogently summed up. So "human interest" and cultural setting find their place, entirely properly, in her book. Secondly, she provides a nuptial feast for each of the periods into which Ding Ling's creative career divides. Companion pieces are dealt with concisely, from the point of view of their elements and emphases; to the centre-piece she gives the full treatment, with extensive quotation and detailed summary, with the result that her reader feels that he knows the story well, is almost persuaded that he has read it himself.

It is a mark of the rapidity of change in modern China that these periods each lasted only a few years. The political vortex accelerated the process of transformation for those who where drawn into it. Thus to the utterly self-absorbed author of "The diary of Miss Sophie" (1928), writing is a means of fixing her individual identity, and a form of self-assertion. "One day" (1931), written after her husband had been shot as a Communist earlier the same year, features in contrast a writer who must abnegate all thoughts of self in order to present the working class, and not without some ups and downs, in Ding Ling succeeded not only in making herself invisible as author but also in representing characters who had no private thoughts or lives; the example chosen to illustrate this phase is "The people's artist Li Bu", a piece of "reportage" on which Mao Zedong congratulated her for following the precepts of his Yanan talks of 1942. The last centre-piece is, as it had to be, the prize-winning novel, *The sun shines on the Sanggan River*, set in a northern village where heaven and earth conspire to effect land reform in 1946. So the author makes it seem, anyway, given the duty of orchestrating events in such a way that contemporary history bears out the known principles of history.

For all that Feuerwerker's book is a study of Ding Ling's fiction and not other person's, it will be apparent from this outline that her career was taken over by forces that controlled all writers in the Communist camp, and eventually in all China. As her tributary joins the main current, the key questions asked of her work accordingly move to the plane of universalism, and literary theorists lend conspicuous support to the discussion. However, Feuerwerker takes from them only what she needs; her conclusions are the outcome of profound and prolonged reflection on her own part.

Ding Ling's fiction is a first-rate book about a second rank writer whose elevation to stardom in her profession is owed to her having stuck to her last in the service of the party that emerged as victors from the battlefield where the promise of men and women of more talent was blighted. The very success of her side then put paid to her in turn. In one way or another all her generation were losers. But that makes their stories all the more sympathetic.

D. E. Pollard

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Milton

The eighth and final volume of *The Complete Prose Works of John Milton* is published by Yale University Press at £16.95. The material in this volume, edited by Maurice Kelley, includes private correspondence from 1666, "Prose preliminary to *Sansone Agostino*" (1671), *A Fuller Course in the Art of Logic* (1672), *Of True Religion* (1673) and *A Brief History of Muscovy* (1682). Plans to include a section on Milton's annotations to the Greek texts have been dropped, since the principal source, the edition of Pindar at Harvard, is now thought to have a clear place in the Milton canon.

BOOKS

Grand notions

Prejudices: a philosophical dictionary by Robert Nisbet. Harvard University Press, £12.25. ISBN 0 674 20065 1.

Most social scientists know well enough how to guard against naked prejudice manifested in objective science, at least in the works of their opponents. But they are less well defended against objective science slipped across in the guise of pure prejudice. So sly a reversal of the conventional rules of scholarly warfare proves a very effective rhetorical device. Not only is the usual search for sneaky value judgments rendered odious, but the mind finds itself opening the gates to simple and salutary truth.

Robert Nisbet is truthful, whether he is dealing with the verisimilitudes of social science or the verities of moral sensibility. Some of his truth comes by way of ordinary sociology in the generalizing mode. His dictionary has entries under social change, social revolution, war, death and militarism, which summarize and interpret vast ranges of empirical data with mastery economy. But beyond these summaries there lies a critique of the huge rubbish tip that has filled up the mind of the European intelligentsia, and which no amount of commonsensicality seems able to erode. Most of the rubbish is ideology converted to the political purposes of intellectuals. "Spilt religion" to the form of alienation, individualism and ideology offers a plentiful store of delusion. What Nisbet tries to do is to free the mind from subjugation to non-existent "things" and from confinement within the boundaries of "isms".

The grandest notions inhabit our minds so pervasively that we can barely detect their presence, though we can name them. The idea of progress is one such, and Nisbet even seems to retain some faith in it, in spite of all the potent misuses it has suffered at the hands of classical liberals, welfare liberals and socialists. Another example is individualism, about which he is less sanguine. Individualism, in his book, involves a weakening of all fruitful bonds and attachments, and leads, therefore, both to the narcissistic brethren of the free spirit and to the leveling of the absolute state. Statism, he argues, is largely through misapprehension of the individualism of the "industrial revolution" all figure largely in Nisbet's personal demography. Yet another massive intellectual presence is the "great chain of being": the ascending scale or ladder of nature. The crucial transition occurs when the ladder is tilted and turned into an ascension through time. Comparative sociology and biology have both been held in thrall to the ascending scale.

For Nisbet, nature makes leaps and takes off from the great Original. This is certainly a contentious area in the contemporary intellectual world, and Nisbet is not afraid to support Creationism (that is, theist evolution), and a cautious rehabilitation of the Argument from Design. There follows a series of debunking exercises directed, not at science, but at the shrines scientists have erected to martyr heroes and the inquisitions have been established. The productive, in particular, come under attack. The "recent" craze for sociology and simplistic notions of genius and race are also singled out as illegitimate property within the "intellectual" line. The emergence of "genius", of course, a very resistant problem, and one made worse by the cult of intelligence testing and all the vulgar little paper-pills which make money out of the however, is not with tedious pygmies, including the shrunken work of educational psychology, but with the equally unimpressive and almost equally sudden demise of clusters of genius.

There is in all this nothing of the conventional assault against science, and technology by environmentalists or by humanists. In Nisbet's view, the many daily rectified against technology has very little substance. Likewise, he has scant sympathy for the caterwaulings of humanists. This comes out very clearly in the entries on "Humanities" and on what he calls "Renaissanceism".

The humanist lobby sedulously fostered the myth of the Renaissance, and Nisbet points up the extraordinary influence of a misreading of Burckhardt's *The Civilization of the Renaissance in Italy*. He then goes on to exorcise today's descendants of the Italian humanists and the philosophers. They are, he says, (on page 264) "characteristically arrogant, opinionated, rootless, cynical, willing to sell themselves for wealth and affluence, ever eager to assault the public order and disturb the moral peace, only too happy to sacrifice profundity, wisdom, and learning upon the altar of brilliance". There lies in this a profound disgust with what Americans call "the academy", with all its foolishness and fearful following of trends, its obedience to gurus, living and dead, hiding behind the screen of free thought.

The final group of entries is made within the moral universe of Johnson and Voltaire. They comprise aperçus on moral conditions: crime and

punishment, effrontery, envy, enthusiasm, intimacy, boredom, permissiveness. I find Nisbet's drama of crime and punishment overplayed, though his assault on the medicalization of evil seems to me entirely proper. On enthusiasm, he agrees with the Bishop who told Wesley it was "a very horrid thing", though these days the political version is very much more dangerous than the religious one. These are all issues which social science characteristically avoids because they inhabit a moral world.

Nisbet is an eighteenth-century moralist, and not least in his last entry on "Wit". Wit, according to Nisbet, is a dangerous commodity. To exhibit wit is to risk one's career, whether as academic or as politician. Scholars rise by gravitas and sink by levity. But he must be talking mainly of America. Put a Swifitian modest proposal to an American audience and you will be dismissed as light minded or else taken seriously. But that a witty person can sometimes survive in America is proved by this ebullient collection of epigrams, maxims, and truths.

David Martin

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Social acts

The Individual and the Social Self: unpublished work by George Herbert Mead. Edited with an Introduction by David L. Miller. University of Chicago Press, £10.40. ISBN 0 226 51674 1.

To their early twentieth-century colleagues and admirers "Chicago pragmatism" was the work of two remarkable teachers: John Dewey and George Herbert Mead. One of Dewey's first and most telling decisions on behalf of the new University of Chicago was to bring Mead with him from the University of Michigan. Together they inspired a generation of American philosophers, psychologists and social scientists to re-establish academic inquiry on pragmatic, anti-dualist and experimental lines.

For modern social theorists Mead's influence has receded as Dewey's has advanced, for two main reasons. First, Mead, in contrast to the prolific Dewey, published almost nothing during his lifetime. His work has been largely through manuscripts edited by sympathetic pupils and transcripts of varying quality of his teaching. Secondly, his basic ideas, repeated in different contexts, can appear to a modern eye stunningly or unsatisfyingly simple.

Mead's chief contribution to pragmatism was to focus on the meaning of human action, broken down into the components of gesture, in terms of the response which it evokes from a social situation. The act is symbolic of a system of meaning, and thus "sociality" (his central concept) consists of universal shared meanings exemplified by an agent's "taking the role of the other" in social interaction. Language, for example, demonstrates how social signs can be functionally identical for members of a community. Understanding and participating in such processes is, for Mead, an essential feature of humanity. One of his pupils quotes a typical remark in this collection: "the ultimate act of driving in a nail is for us the meaning of a hammer... a hammer is not a hammer to a gorilla".

The vehicle of Mead's thought in Chicago was his course on "Social Psychology", delivered almost without a break between 1900 and 1930, which forms the backbone of the most important posthumous volume (*Mind, Self and Society*, edited by Charles Morris in 1934). David Miller was a student in seven of Mead's Chicago classes and has gone on to become his most authoritative biographer (*George Herbert Mead: self, language and the world*, 1973). He has compiled here a further set of primary materials for Mead scholars: two anonymous sets of class notes

from "Social Psychology" in 1914 and 1927, an unpublished essay from 1917 on "Consciousness, Mind, the Self and Scientific Objects", and two short papers, probably by graduate students, working through psychological and physical details of the "Functional Identity of Response" and the "Functional Identity of Stimulus".

Only one of these items can, of course, be properly described as unpublished work of Mead himself. Nevertheless the effect of the collection will be to round out standard interpretations of Mead's thought and add weight to his reputation as a teacher. The two sets of lecture notes demonstrate some significant shifts of interest over 13 years. Each begins with detailed analysis of the gesture and the social act. The 1914 text then moves through a discourse on contemporary race relations, a view of democracy as the solvent of caste, and a final section on the social function of art and literature. The 1927 notes (in themselves a useful supplement to the set employed by Morris) enter technically more sophisticated and contentous areas. There is a fundamental critique of Watsonian behaviourism, and many echoes of the organic "process philosophy" of Alfred North Whitehead. Miller, who followed Mead into a detailed concern with Whitehead, interestingly fixes the 1917 essay, which moves from an attack on contemporary neo-realism to a theory classed by Miller as "emergent evolutionism", as the point at which Mead became susceptible to Whitehead's error.

The importance of a social psychology based on such principles as that of the "generalized other" (the term used in the 1927 notes to refer to the validation of communicative behaviour) to pragmatism and American social science is clear. Mead's work further undercut the dualism of mind and body, pointed to an experimental, open future rather than an institutionally constrained past, and made participation in the life of the community a moral as well as a practical imperative. But, as this material confirms, Mead and Dewey's benign, culture-specific view of advanced American democracy was ill-equipped to deal with opposition and minority dissent, both significant problems for pragmatic social and political theory.

David Watson

Dr Watson is dean of the modular course at Oxford Polytechnic.

Nationalism

Anthony D. Smith's book *Theories of Nationalism*, first published in 1971, is now issued in a new paperback edition by Duckworth at £8.95. It examines critically five of the principal theories that have been advanced to explain the rise of nationalist movements both in Europe and the developing countries.

There are however two points to be made and Janet Wolff makes them well. The first is that traditional aesthetics, idealist criticism which looks for essentials, ultimates or universals in art and aesthetic judgment and which seeks to explain the significance of a work of art without reference to the social and historical conditions of its production and its reception, must retreat before the sociological critique. Why a picture, a film or a piece of music was produced at a particular time, loved at another, rejected at a third; how the same work of art is judged to be art and by whom; these are questions which sociologists can and must approach and must - and this of course is Janet Wolff's point - be listened to. They must be listened to, despite the many errors to which sociologists in their attempts have succumbed - Althusser's self-contradictions, Marcuse's idealism, Lukács's idiosyncrasy. And they must be listened to despite the horrors of relativism which entirely historicist judgments encourage, despite the inability to account for the emergence of particular "great works". In any theory which reduces art to politics, and despite the fact that any account of the genesis of a work of art leaves untouched the question of its value or validity.

The second point is both consequence and condition of these relative failures. Sociology, adequate to good on the subject of the artist, has nothing to say about the butterfly. It has nothing to say about the unique, about the beautiful and about pleasure. Equally it has refused, as an ideological distortion, attempts to identify consistencies in human values and beliefs across time and culture, hence it has nothing to say about art in any generalizable sense of the term. Indeed it would refuse to accept that any such generalization was possible.

The battle lines are drawn and Janet Wolff draws them clearly enough; she is sensitive to the intricacies of the conflict. But she appears to want both the ha'penny and the cake. If, as she has argued, the various attempts of sociological theory in this area have fallen at the last and crucial hurdle, what evidence is there to suggest that sociology has the last word? At its best the sociology of art can and has said much to illuminate questions of aesthetics and as such it has the right to many words. But to the last one? I doubt it.

Roger Silverstone

Roger Silverstone is lecturer in sociology at Brunel University.

Not the last word

Aesthetics and the Sociology of Art by Janet Wolff. Allen & Unwin, £10.95 and £4.95. ISBN 0 04 301152 7 and 301153 5.

Janet Wolff's new book appears in a series called "Controversies in Sociology". In a strict sense this label is inapposite, for the book has less to do with the controversies within sociology than with the rather more significant controversies between sociology and the rest of the world. In this case with all those stubborn theories of art and aesthetics which have refused to comply with sociology's reduction of art to matters social.

In so far as she is talking to other sociologists, then her message ought to have been redundant; she is telling them to draw back from the full totalitarian onslaught in which sociologists in their more heady moments have felt inclined to indulge. She argues that art and questions of aesthetic experience and value have and must have a specific character, and that however important an understanding of the social and historical conditions of production and consumption is, it can never completely account for art.

This seems to me like skating on very thick ice. Her writing is lucid and she offers a neat introduction to the various contributing theories, but it becomes increasingly obvious that having balked at the latest wave of essentially neo-sociological and broadly culturalist work, either for its failure to make sense of aesthetic pleasure (Foucault), for depending on unchallengeable notions of human nature, albeit materialist ones (Timpanso, Raymond Williams and, she might have added, Lévi Strauss), or for the equally unchallengeable reductionism of psychoanalysis (Lacan of course and the work of the English critic, Peter Fuller), she makes little progress.

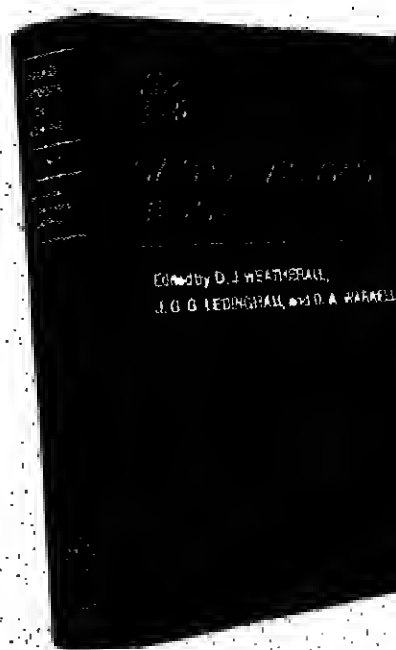
On the one hand "we require a more adequate, historicized, theory of human experience than has so far been produced"; on the other, despite the murky promise of discourse analysis and psychoanalysis "if the debate is between sociology and aesthetics, sociology has the last word". It is possible of course, and the whole book despite itself is evidence of it, that sociology is by no means close to knowing what that last word is.

Roger Silverstone

Roger Silverstone is lecturer in sociology at Brunel University.

Oxford Textbook of Medicine

Edited by D.J. Weatherall, J.G.G. Ledingham, and D.A. Warrell



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Oxford University Press

BOOKS

A variety of dynamic controls

Dynamics of Biological Membranes: Influence on synthesis, structure and function
by Miles D. Hrusley and Keith K. Stanley
Wiley, £21.00 and £8.90
ISBN 0 471 1001 8/3 and 951

All cells have an outer biomembrane, a plasma membrane, which carries the recognition sites for sensing the external environment and which also controls the ions, water and other molecules which enter and leave the cell. Inside the cell other biomembranes encapsulate the various functional units such as the mitochondria, the nucleus and the endoplasmic reticulum.

In the eye, other biomembranes organize the visual pigments; and in plants chlorophyll is organized within chloroplast membranes. It is clear from many studies that biomembranes are important for controlling permeability processes and also for spatially organizing enzymes and pigment molecules. Some disease conditions such as multiple sclerosis and perhaps muscular dystrophy have also been linked to changes in biomembrane properties.

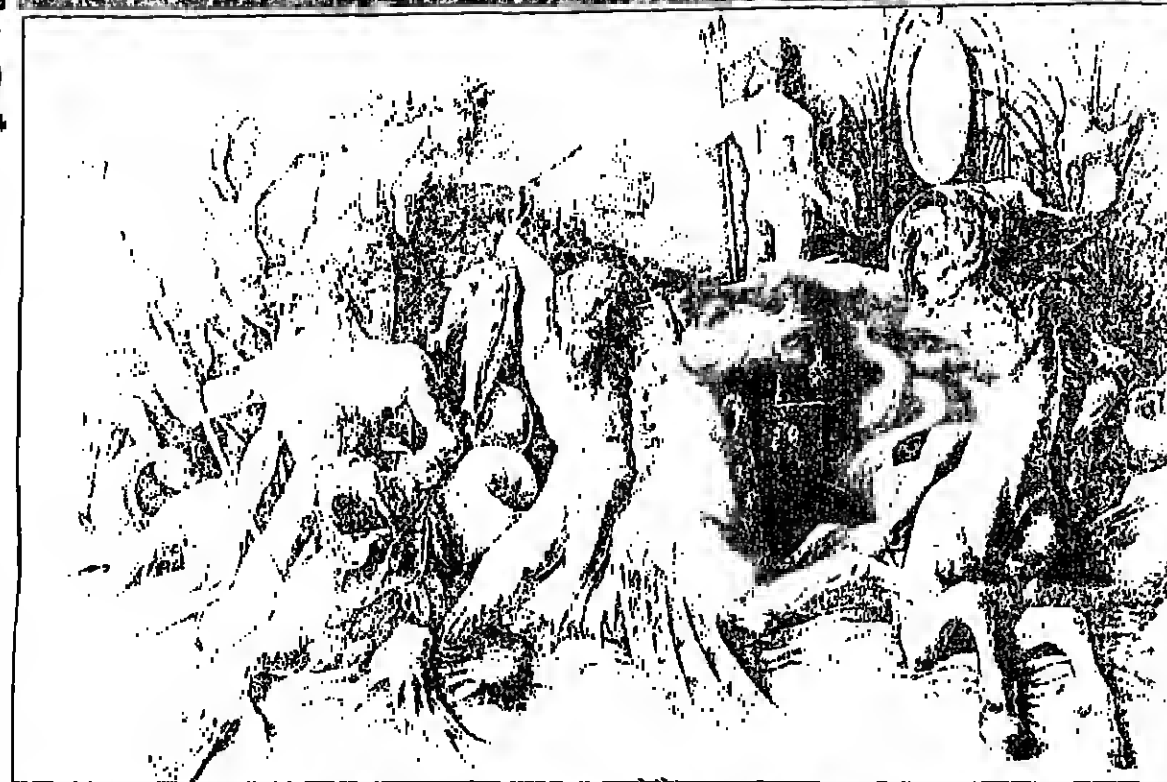
Although the concept of a biomembrane was introduced as long ago as the beginning of the century, it was electron microscope studies which revealed the many types of biomembranes which occur with all types of cells. However, these early studies projected a rather static and uniform picture of biomembranes. More recent studies using physical techniques have shown the way in which the proteins are arranged in a lipid bilayer matrix, and these studies emphasize the dynamic character of biomembranes. From this work concepts such as biomembrane fluidity, phase transitions, lipid diffusion, protein rotation and lateral motion have been developed.

This book, which attempts to bridge the gap between research level review volumes and short textbooks, discusses the structural and functional characteristics that have contributed to the concept of the dynamic biomembrane. It contains seven chapters ranging from descriptions of membrane components (for example, the lipids, proteins, carbohydrates and cholesterol) to distributions of lipid and protein mobility, lipid-protein interactions, asymmetry of components, reconstitution, membrane turn-over and permeability processes. The authors are two young scientists who have themselves made important contributions to this field.

The book is well produced with good diagrams and brief and succinct summaries at the end of each chapter, as well as selected references for further reading. However, it does tend to over-emphasize some of the authors' and their colleagues' own contributions, particularly with regard to the controversial concept of the lipid rafts, but perhaps this is to be expected.

There are also one or two generalizations which I found surprising; for example, "Bacteriorhodopsin and rhodopsin [from animal retinas] should not be confused as their structures are not related". My own impression, but I may be mistaken, is that recent studies of amino-acid sequences of rhodopsin have led to the suggestion that the structures of these two important proteins are indeed similar.

In the scientific journals and research publications, the debate continues on many of the topics discussed in the book; for example, the molecular bases of permeability processes, the way in which cell fusion occurs, the reason for lipid asymmetry, and the basis for unsaturated fatty acids. Views on biomembrane structure and functions have changed considerably during the past 12 years, but there are still important questions to be clarified. This book



"Battle of the Sea-Gods", an engraving by Andrea Mantegna (1431-1506). Taken from *Drawings in the Italian Renaissance Workshop* by Francis Ames-Lewis and Joanne Wright, published by Hurdwood Press (in association with the Victoria and Albert Museum) at £11.95 to accompany an exhibition of early Renaissance drawings being held at the museum until May 15th, 1983. (A paperback version is available from the museum at £4.95.)

young graduates to this fascinating subject, the ramifications of which extend into biology, botany, physiology and medicine.

Dennis Chapman

Dennis Chapman is professor of biophysical chemistry at the Royal Free Hospital School of Medicine, London.

Maths for biologists

Differential Equations and Mathematical Biology
by D. S. Jones and B. D. Sleeman
Allen & Unwin, £15.00
ISBN 0 04 515001 X

Between the elegance of mathematical theory and the messiness of application there is an unresolved tension. This book, for all its undoubted strengths, suffers from it. Intended to be used variously as a course in differential equations for students of biology, or as a course in biological modelling for students of mathematics, it falls short, I think, of both its aims. It does not adequately discuss the difficulties of application; yet, also, in attempting to avoid too much abstract mathematics, it does not always manage to unify what at times comes across as a random assortment of ad hoc techniques.

It does, however, have many very admirable features. The authors write clearly, preferring words over symbols, examples over generalizations. Their book is stimulating and enjoyable. It covers both ordinary and partial differential equations - the former developed as far as phase diagrams, the latter mostly confined to linear equations of the first and second orders. Within these limits it is thorough, and it has numerous exercises (and solutions) with which the reader can practise. There is also material on evolutionary equations and on catastrophe theory. Biological applications are illustrated principally in five contexts: the heart-beat cycle, the transmission of nerve impulses, chemical reactions, epidemics, and competition between species of predator and prey.

Despite the diversity of these illustrations, however, the book does not really describe how readers might go about applying differential equations for themselves. Questions keep springing to mind that often turn out not to go unanswered. Why choose precisely this differential equation, or look at this class of solutions? When should we use a differential equation rather than heuristic statistical methods? How do we check that our solutions are biologically valid? How, in other

words, does the mathematical theory interact, through statistical theory, with experiment? Related to these questions is the absence of any more than passing reference to numerical techniques of solution; the absence of any reference at all to the practical value of stochastic methods; and the absence of any illustrations from botany or agricultural science.

So the book does not deal with some important aspects of application. Yet on the other hand it is perhaps not mathematical enough: some of the theory could have been easier to follow if slightly more than "first-year university" mathematical knowledge had been assumed in the reader. Systems of ordinary differential equations, for instance, could have been solved more concisely - and, in my view, more comprehensively - if matrices and eigenvalues had been used explicitly. Of course, this is all a matter of judgment, and generally I do think the authors have decided wisely what theory to leave out: thus they are obviously right not to assume knowledge of functional analysis when they investigate boundary-value problems. But the ultimate danger in simplifying the mathematics is that non-mathematicians might come away with the idea that there are no difficulties at all, and consequently might not fully appreciate when they should discuss their experiments with a mathematician or a statistician.

If this book were to be used in the way the authors intend, its strengths would have to be carefully supplemented to counteract its weaknesses. On its own it would be incomplete.

Lindsay Paterson

Lindsay Paterson is a member of the scientific staff at the ARC Unit of Statistics, University of Edinburgh.

Nucleic acids

Nucleic Acid Biochemistry and Molecular Biology
by W. L. P. Mainwaring, J. H. Parish, J. D. Pickering and N. H. Mann
Blackwell Scientific, £14.80
ISBN 0 632 00632 3

This year marks the thirtieth anniversary of the publication in *Nature* by J. D. Watson and F. H. C. Crick of their classic paper proposing a structure for deoxyribose nucleic acid (DNA). Perhaps it is a reflection of the fact that university undergraduates and even A level students nowadays take this structure so much for granted that this key paper is not listed in the references at the end of this book - or does it perhaps reflect the authors' expressed aim "to try

and look into the future"?

Students of biochemistry and molecular biology will appreciate this comprehensive yet compact text, which is well written and clearly illustrated. It is, however, a textbook on nucleic acid biochemistry and those aspects of molecular biology of interest to nucleic acid biochemists, not a textbook on molecular biology - a limitation not immediately apparent from the unambiguous title.

Within the narrower interpretation of the title this is an excellent text in many ways. After a brief introductory chapter, which itself might be suitable as a simple primer, the major part of the material has been divided into a series of more or less self-contained chapters. These cover the biosynthesis of nucleic acid precursors; the structure, properties and sequencing of nucleic acids; replication, repair and recombination of nucleic acids in bacteria; transcription and translation of nucleic acids in bacteria; the structure and replication of chromosomes in eukaryote (higher) organisms; transcription and translation in eukaryotes; and finally two chapters on organelles and on recombinant DNA.

The authors divide their material both sensibly and logically. There are sufficient differences in general, let alone in detail, between prokaryote (lower) and eukaryote organisms in the ways DNA is replicated, in transcription and in translation to merit separate treatment of these topics without tiresome duplication. Indeed, where attempts are made to treat them together they fail. It is the differences that tend to emerge rather than the common factors.

In several instances the most recent advances in knowledge have either come too late, or come to the attention of the authors too late, to be included. Indeed, few of the references to original sources are post-1980, a regrettable feature in a subject where progress is rapid. The authors are all too conscious of this fact and point out in a note added in proof that "DNA sequencing has advanced beyond the state described"; this is clearly not the "state of the art" treatment. The other very telling area is recombinant DNA, where again the authors call attention to the shortcomings of their chapter in a note added in proof.

Stuart Glover

Stuart Glover is professor of genetics at the University of Newcastle upon Tyne.

Topics in Ordinary Differential Equations, by W. D. Lakin and D. A. Sanchez, has been re-issued as a Dover paperback by Constable at £3.40. Intended for mathematics undergraduates and advanced students in the natural sciences, the book suggests some interesting methods for obtaining analytical approximations to solutions.

Marine ecology

An Introduction to Marine Ecology
by R. S. K. Barnes
Blackwell Scientific, £11.80
ISBN 0 632 00892 X

Richard Barnes and Roger Hughes have produced a text which will be of considerable value to students studying either marine science as a speciality, or general biology or ecology. Their approach, however, is selective, in both the extent to which particular topics are discussed, and the specific illustrative studies which are presented. By definition, therefore, the outcome is a synthesis which cannot be all things to all people. Nevertheless, I feel confident that this will become a widely read and appreciated contribution.

The first chapter frames the subject in its broadest (global) context and perhaps suffers only from an inadequate formulation of fundamental oceanography. In particular, discussion of the oceanic redistribution of heat and oxygen, and indeed the structures of water masses and their circulation, could profitably have been included. It is, however, heartening to encounter detailed illustrations of organisms referred to throughout the text from the very beginning: the value of such drawings to undergraduates cannot be overemphasized.

The second chapter considers surface water plankton systems. Here I was surprised to see the dismissal of the phenomenon of vertical migrations in only three pages. Chapter three provides a very useful account of the structure and function of intertidal and shallow-water soft-sediment communities. As in the previous chapters the emphasis lies on the broader questions, with examples, but the reader is left with little appreciation of the multiplicity of interactions between sediment structure and the organisms themselves.

The subsequent chapter is necessarily brief and concentrates on the production of mangroves and seagrass assemblages. Perhaps a major omission here, however, is of *Phyllospora*, the unusual and extensive rocky shore monocotyledon of the Pacific north-west.

Chapters five and six (on kelp forests and coral reefs, respectively) will perhaps be of most use to students. Both topics are difficult to present in the requisite concentrated form. The resulting chapters are both highly informative and readable and should provide a useful introduction.

Chapter seven, however, is a considerable disappointment. In devoting barely 10 pages to the deep-sea benthos I feel the authors have performed not only an injustice in excluding a large body of benthic marine studies, but have missed an opportunity especially in terms of the general readership for which their book is intended. Of all the recent advances in biological knowledge surely the discovery and preliminary investigations of the hydrothermal vents communities must be the most astonishing and revealing?

Chapter eight presents a compilation of nekton (mostly fish) population data and precedes the last major chapter in the text, on life-history strategies. In general the coverage of sub-topics in chapter nine is commendable, although many may question some of the specific studies selected. The book is completed by respective chapters on speciation and biogeography (together with ecological diversity), the marine ecosystem as a functional unit, and man's impact thereon.

Although I am disappointed at the brevity with which deep-sea benthic ecology is treated and at the virtual absence of discussion of epifaunal ("fouling") communities, I can wholeheartedly recommend this to undergraduates.

C. D. Todd

C. D. Todd is lecturer in marine biology at the University of St Andrews.

BOOKS

ENGINEERING

Structural safety

Uncertainty Analysis, Loads, and Safety in Structural Engineering
by Gary C. Hart
Prentice-Hall, £19.45
ISBN 0 13 935619 3

It has long been recognized by engineers that, due to the random nature of the parameters involved, there is an inherent element of uncertainty in any technological endeavour, and this thinking is now being reflected in the current codes of practice in which the engineering parameters are described in terms of the probabilities that acceptable design limits will be exceeded.

Most texts on structural mechanics consider the material properties, structural geometry and loading to be deterministic, thus necessarily producing deterministic values for the structural response. Although the lack of reality in such an approach has always been realized, the development of a more realistic assessment has largely been neglected.

This book presents an excellent introduction to probability methods and forms a useful addition to existing works on structural mechanics. It treats the subject of uncertainty from basic considerations, and one of its most pleasing features is that, after the development of each topic, simple numerical examples are presented, these serving to supplement the understanding of the mathematical analysis in a most powerful manner.

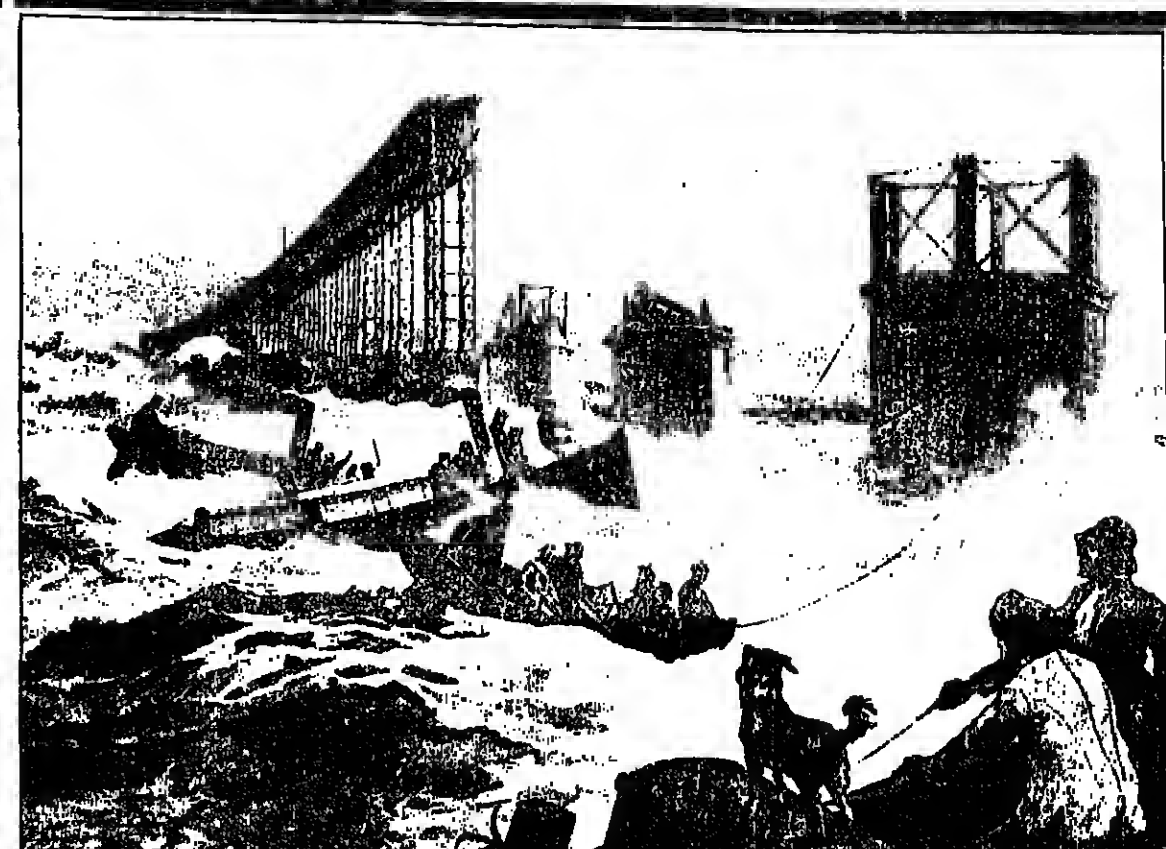
The work is divided into four well-defined sections: statistical methods of analysis, structural analysis, structural failure, and load analysis. The first presents the basic statistical requirements necessary for an appreciation of the remainder of the book, beginning with a description of random and deterministic variables and the fundamental concepts of variance and standard deviation. The ideas behind the formulation of probability distribution functions are interestingly developed, although a description of where the various functions discussed are applied could have given a clearer physical appreciation of the mathematical results.

The second section deals with the application of statistical methods to structural response. Classical structural analysis involves the ascribing of unique values to the material and structural properties, this formulation leading naturally to unique values of the response parameters. In this section analyses using the random nature of the structural variables are developed giving solutions in the form of probabilistic response. Two methods are described for the calculation of the response uncertainty: the analytical method of linear statistical analysis and the perhaps more fundamental, Monte Carlo method. The chapter concludes with a short but lucid introduction to the theory of decision-making.

A rather short chapter then follows concerned with the probabilistic analysis of structural safety in which the key topics are structural failure and factors of safety. Because of its fundamental simplicity, the Monte Carlo method is again invoked as a solution process.

The final section treats the important subject of loading, perhaps the most basic of parameters in structural engineering practice. Loading to which structures are subjected are of widely differing forms and the author breaks the treatment neatly into three classes: dead and live wind, and earthquake loading. The fundamental nature and description of such loads is clearly given, the effects being especially well explained.

The further problem of deciding whether or not a calculated probability is acceptable is unfortunately only briefly considered, but as an introduction to uncertainty analysis this book serves its purpose admirably.



Etching of the Tay Bridge Disaster in 1879, from "The Illustrated London News". Taken from *The Nature and Aesthetics of Design: a design handbook* by David Pye, recently re-issued in paperback by Herbert Press at £6.95.

The author has prepared his text and examples with a great deal of care and thought and has explained the concepts in a simple and enlightening manner. His book will therefore be a valuable contribution to the important concepts of uncertainty theory and to their application to structural safety.

D. J. Just

D. J. Just is lecturer in civil engineering at the University of Aston.

Masonry arches

The Masonry Arch
by Jacques Heyman
Ellis Horwood, Wiley,
£16.50 and £8.50
ISBN 0 85312 500 7 and 501 5

Masonry arches are not only of historical interest. Despite the enormous road building programme of the sixties and seventies, they still form the basis of the greatest proportion of road bridges in Britain. Although it has been recorded that there are thirteen thousand on the Scottish minor road system, the English system is more dense with minor roads and byways must account for an even larger number. Most of them are older, some many times older, than the hundred and twenty years a modern bridge is designed for. Indeed, Professor Heyman discusses work on Trestle Bridge in Kent, built in the thirteenth century and still carrying traffic.

In recent years arches have been neglected by most engineers, as work in new construction has been readily available, and offered more obvious excitement. Longevity may have contributed to this lack of interest, as a structure which has stood for centuries and which has shown no visible sign of deterioration in a life time, comes to be regarded as part of the earth on which it stands. It has been easy for researchers to dismiss arches as fully understood, but it is clear that they were not. It is no longer acceptable to decide what load a bridge can safely carry and either put up a weight limit sign or pull down and replace the bridge. Professor Heyman's application of modern theory to ancient structures provides us with a viable alternative, in not only assessing the present strength but also enabling us to design strengthening measures economically.

Although this slim volume is a collection of material published piecemeal elsewhere, its publication is justified because the whole is more than the sum of the constituent parts. To an engineer it is readable on two levels. It is clearly a textbook and will be prized as a ready source

of reference. To dip for information without its context is, however, to miss much of value. The steps by which the argument is advanced are sufficiently small for the book to be enjoyed as light reading, even by students. Much of it would not be beyond the layman, although to have removed jargon completely would have extended the text unreasonably.

A chapter on the history of the study of arch behaviour presents an interesting insight into the progress of our understanding of structures. Covering the period from the late seventeenth century to the late nineteenth century, it implies that the study of structures followed established need and that academic interest in arches ceased immediately when the need was removed. Twentieth-century workers, Pippard, Henderson and now Heyman, have also responded to a need as increased loads have brought ancient bridges to the point of collapse. It is also interesting to note that throughout the period considered, theoretical and practical work have been interdependent. There has not been a long period when analytical or empirical methods have held sole sway.

The book is timely, as bridge maintenance is growing in importance and as we cannot afford to replace old bridges if they fall into disrepair. There is even discussion of a revival in arch bridge building. The long life to be expected must favourably affect the lifetime cost.

William Harvey

William Harvey is lecturer in civil engineering at the University of Dundee.

Concrete and steel

Analysis and Design of Structural Connections: reinforced concrete and steel
by M. Holmes and L. H. Martin
Ellis Horwood, Wiley,
£25.00 and £9.50
ISBN 0 85312 215 6 and 549 X
Reinforced Concrete Design
(second edition)
by W. H. Mosley and J. H. Bungey
Macmillan, £16.00 and £7.95
ISBN 0 333 335 56 2 and 57 0

Steel and concrete are major construction materials - relatively cheap, strong and durable. A reinforced concrete or steel structure is, however, only as safe and stable as the members connecting them. Connections between structural members thus form an integral part of the analysis and design of structural members. The design of structural joints has, however, been a much neglected subject - research information

wall-wall connexions, and so on. Special emphasis is given to anchorage, laps and joints of reinforcement, and the various design concepts in precast members.

The last three chapters discuss in detail bolted and welded connections and those from steel columns to their foundations. A good deal of design data is provided, and special consideration is given not only to the analysis of these connections but also to their failure criteria and detailing specifications. Design procedures are clearly set out in each case, alternative approaches recommended, and possible methods of design presented where available information is inadequate.

Each chapter first presents a detailed discussion of the complex system of forces acting on the connections, and these are amplified by simple but clear force diagrams. A large number of detailed worked examples is then provided to clarify the analytical procedures. One possible limitation is the shortage of dimensioned sketches accompanying the worked examples. It would also have been useful to see more diagrams detailing the design constraints and their relevance to the behaviour of the connections.

This very useful and practical book is clearly a testimony to the vast contribution that the late Professor Holmes and his colleagues have made to the field of relating the analysis and behaviour of structural connections to their design and detailing.

Mosley and Bungey's book is a second edition of a popular textbook for engineering undergraduates and young practising engineers involved in the design of concrete structures. It sets out to provide a clear and straightforward introduction to the principles of the limit state method of design, and the application of these principles to the design and detailing of reinforced and prestressed concrete members.

The second edition includes new material related to the yield line and strip methods of analysis of slabs, an extension of the limit state design of water-retaining structures, and further detailed discussion of shear, and prestress losses and end block design in concrete. As there have been recent changes in the yield stress specifications of steel reinforcing bars, these have also been considered in amending the worked examples.

R. N. Swamy

R. N. Swamy is reader in civil and structural engineering at the University of Sheffield.

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Edward Arnold
41 Bedford Square, London WC1B 3DQ

Robot Manipulators

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by Richard P. Paul
Robot Manipulators is firmly grounded on the theoretical principles of the subject and makes considerable use of vector and matrix methods in its development. Designed for graduate courses in robotics as well as for practising engineers, the book covers homogeneous transformations, defining transformation equations, solving transformation equations, differential transformation relationships, motion trajectories, dynamics, digital servo systems, force transformations, compliance, and manipulation languages. Artificial Intelligence Series, 300 pages, illustrated, 1982, £24.75

Robot Motion

Planning and Control

edited by Michael Brady, John Hollerbach, Timothy Johnson, Tomás Lozano-Pérez and Matthew Mason
This book brings together 19 papers of fundamental importance to the development of a science of robotics. These are grouped in five sections: dynamics, trajectory planning, compliance and force control, feedback control, and spatial planning. Each section is introduced by a substantial analytical survey that lays out the problems that arise in that area of robotics and the approaches and solutions that have been tried, with an evaluation of their strengths and shortcomings. In addition, there is an overall introduction that relates robotics research to general trends in the development of artificial intelligence. Artificial Intelligence Series, 550 pages, Expected summer 1983, approx £28.00.

Massachusetts Institute of Technology
The MIT Press
125 Buckingham Palace Road,
London SW1W 9SD

BOOKS

ENGINEERING

Producing cold

Principles of Refrigeration
by W. B. Gosney
Cambridge University Press, £47.50
ISBN 0 521 23671 1

Like teachers in many other universities, polytechnics and colleges where refrigeration is included as part of the mechanical engineering course, I have searched in vain for a modern textbook on the subject to recommend to my students. However, at over 600 pages and at nearly 150 Professor Gosney's book seems doomed to become a library reference volume rather than the textbook he intended. The principles are there and well explained but they are swamped by too much detail. For instance, Professor Gosney includes several pages in chapter two listing pipe sizes and their wall thicknesses and the size of spanners for different joint fittings.

In the preface the author admits that the book as originally planned was to have covered the application of refrigeration methods in practice, but at a late stage this scheme was found to be impracticable for the book would have been much too long. The light appears to have dawned at the end of chapter six, for the last two chapters are much more concise yet give sufficient coverage of gas refrigeration cycles. It is a great pity that at this state Professor Gosney did not go back and prune the earlier chapters of unnecessary details.

This would probably have meant, among other things, the removal of much historical detail, although this is of interest to the general reader and perhaps the postgraduate student. Herein lies part of the problem, that his trying to cater for the needs

of undergraduates, postgraduates and the general reader, the book fails completely to satisfy any one group. The undergraduate will be put off by the sheer size of the volume, the postgraduate by the fact "that certain points appear to be unduly laboured, and that the obvious is stated again and again", and the general reader by the technical detail.

It seems rather strange that in the first chapter on "methods of producing cold" that there is no introductory section on "why cold is needed". Of course, some mention of applications is made in later chapters and the preface promises us another book on refrigeration methods in practice, but surely a brief survey of modern applications of refrigeration would have been of great interest to all readers before embarking on the rest of the book. However, this is a useful work of reference. It is very easy to read and to learn from, and I would refer undergraduates to specific topics in it; in particular it contains one of the few detailed descriptions of adsorption refrigeration systems. A much abridged version in paperback would be appreciated.

C. A. Bailey

C. A. Bailey is a fellow of Keble College, Oxford, and university lecturer in engineering science.

Sound sources

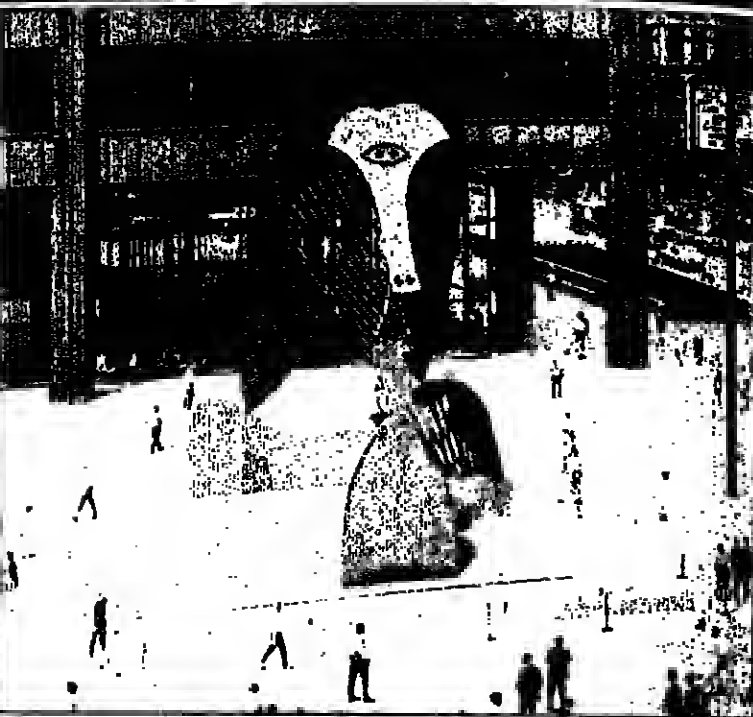
Sound and Sources of Sound
by A. P. Dowling
and J. E. Ffowcs Williams
Ellis Horwood, Wiley,
£25.00 and £5.50
ISBN 0 85312 400 0 and 527 9

The study of acoustics in schools and university physics departments has declined in favour of what is considered to be modern science. In engineering, however, there has been a modest renaissance in this subject during the past 25 years, fuelled by interest in environmental noise control (particularly aircraft noise), by requirements to reduce industrial noise to avoid the infliction of occupational deafness, and by rapid growth in the field of the transmission of this latter work is the product of defence research, particularly submarine counter-measures and detection, much of the related literature is unavailable.) All these subjects require a knowledge of sound sources and methods of propagation.

The interest in aircraft noise in the 1950s directed many research workers back to the work of the physicists and mathematicians of the nineteenth century, particularly Lord Rayleigh. Although their work provided the intellectual basis for understanding the production and transmission of noise in gases, fluids and solids, it was not until the problem of making quieter aircraft engines became important that more practical approaches to the problems were applied. The subject attracted a vast amount of experimentation, particularly on the part of aircraft and engine manufacturers who were desperately attempting to produce noise suppressors to enable the new jet-powered aircraft to operate free from the constraints imposed by airport authorities in their vain attempt to reduce noise levels.

It was during this period that the pioneer work of Sir James Lightill provided the basis for understanding in practical terms the mechanism of subsonic jet noise production, and shortly afterwards he and Professor Ffowcs Williams extended that understanding to the supersonic jet. Since that time, Professor Ffowcs Williams has widened his research into the generalized topic of sound production and transmission, successfully providing a more rigorous approach to our understanding of this important subject.

It is this work which forms the basis of this book. Essentially an undergraduate text, it is clearly written with symbols, equations and diagrams simply and neatly arranged, in the fashion of United States textbooks. It contains a series of exer-



Steel statue by Pablo Picasso, in front of Chicago's Civic Center. Taken from *Copper in Iron and Steel* by Iain Le May and L. McDonald Sckelky, published by Wiley at £53.00.

cises at the end of each chapter with the solutions clearly explained in a section at the end of the book.

Although the book is wide-ranging in its contents, it concentrates on the effects of noise in air and water. It is refreshing to have a text which combines the study of both media, as the student is usually referred to different reference material and therefore often finds it difficult to compare the important differences and similarities which exist between the two.

The book begins with a sensibly developed chapter on the characteristics of sound. This section on subjective units, however, is patchy and should either be expanded, or entirely omitted and the reader guided elsewhere. Chapter five on ray theory will be very useful, particularly the more rigorous definitions, although the reader may be left with a rather simplified picture of sound propagation effects. Later chapters cover a variety of topics: sources of sound, reciprocity, moving sources, and flow-induced vibration and instability.

Moor criticisms are that the book may provide the impression that the subject can be treated as precisely as the book implies; and that there are relatively few references (and where these do occur they are abbreviated, omitting titles). However, the book should become widely used in university courses, as the subject should form a basic part of an engineer's education.

J. B. Large

J. B. Large is dean of the faculty of engineering and applied science, and former director of the Institute of Sound and Vibration Research, of the University of Southampton.

Engine design

Turbocharging the Internal Combustion Engine
by N. Wilson and M. S. Jansel
Macmillan, £37.00
ISBN 0 333 24290 4

Turbocharging increases the power to weight ratio of large diesel engines and also decreases the cost per kilowatt. For the car designer it offers better vehicle fuel economy by enabling smaller engines to replace large ones. It is not a particularly new concept: the original ideas were developed in the 1920s and by the 1940s many engines had been supercharged or turbocharged. The Rolls Royce Merlin engine which powered the fighters of the Battle of Britain was supercharged using a compressor, or similar, to that on a turbocharger, driven from the engine crankshaft. The turbocharger utilizes the hot gases of the engine exhaust to drive the compressor.

Until now, the only major textbook devoted to supercharging has

been Zinner's *Supercharging of Internal Combustion Engines* (Springer, 1978); otherwise, the engineer in this field has had to refer to a broad range of books and papers, some specializing in compressor design, others on turbines and finally those respected authors in the fields of engines and turbocharging, amalgamating this work and supplies a comprehensive list of references.

After a general introduction, the first five chapters deal with the turbo-machinery in detail, with separate chapters on radial-flow compressors, and radial-flow and axial-flow turbines. Chapters six and seven discuss the merits of the different systems of turbocharging and chapter eight describes more complex exhaust manifold designs. There are also chapters on turbocharging petrol engines, high-output diesel engines, transient performance effects, and noise and exhaust emissions. A final chapter considers modelling.

The scope of the text means that the authors have not dealt with certain areas in as much depth as a specialist might desire, and some of the techniques used are rather old-fashioned. This is particularly true in the turbomachinery chapters. Here one-dimensional analysis is used extensively, even though the compressor or turbine designer would probably be reading this book to gain some appreciation of the problems posed by using flow application. The appendix would be true of the engine combustion expert who would benefit from an appreciation of the role of the turbomachinery.

In writing the text the authors have attempted to relegate much of the mathematics to the modelling section: at the end of the book. Although this makes the text easier to read to that there are few mathematical interruptions. It is not always easier to understand. Although the modelling section is quite adequate as a tool for design, it is rather scantily described and would be difficult to use (for example, the section on wave action modelling). One major criticism is that the diagrams are produced in a variety of styles and at severely reduced scales; a more minor point is that the authors have not always shown much imagination in allocating symbols to parameters, for example, RN for degree of reaction; PR for pressure ratio.

This book is essential reading for any engineer interested in turbocharging internal combustion engines, whether petrol or diesel. It brings together a broad range of information from the literature and will also serve as a useful text for postgraduate teaching.

D. E. Winterbone

D. E. Winterbone is a professor of mechanical engineering at the University of Manchester Institute of Science and Technology.

BOOKS

ENGINEERING

Working on a secure base

The Surface of the Earth: an introduction to geotechnical science
by Peter J. Williams
Logman, £9.95
ISBN 0 582 30043 6
Geology for Geotechnical Engineers
by J. C. Harvey
Cambridge University Press,
£12.50 and £5.25
ISBN 0 521 24629 6 and 28862 2
Geotechnical Engineering
by Ian K. Lee, Weeka White
and Owen G. Ingles
Pitman, £19.95 and £10.95
ISBN 0 273 01755 1 and 01756 X

The field of geotechnical engineering is cultivated principally by the civil engineer with substantial support from the geologist. The geologist understands the processes which transform the magma into the clays, silts, sands and rocks which are the working materials of the geotechnical engineer, and he is generally better able to interpret the drift and solid geology, and to make informed comments on aspects of the geological history of a site which are relevant to the civil engineer.

The civil engineer calls upon the geotechnical engineer for expertise in the design of appropriate foundations for structures, design of earth retaining structures, and the design of earth structures. The civil engineer is not frequently associated with structures of steel and concrete, artificial materials manufactured with selected materials under conditions which enable sensible predictions of the properties and characteristics of the finished material to be made, with a relatively easy mind.

The geotechnical engineer works with the disturbed and undisturbed materials generated by the combined operations of all of nature's forces acting on what was originally the magma, but which may have been transformed into materials which are infinitely variable in composition, properties and characteristics. Thus the soil in situ is rarely uniform, homogeneous and isotropic. Despite this, however, a borehole to take soil samples is the starting point for analysis and design work.

The *Surface of the Earth*, written by a geographer, is aimed at a very wide readership. Although there is much here that would interest the geologist, and the engineer in a peripheral sense, these sections are pitched at too superficial a level to be of value. However, as many graduates in various disciplines are now being trained to scan much broader horizons in their search for employment, it may well be that a geographer might find that the engineering chapters aroused some enthusiasm. Although geology is a science and engineers apply scientific concepts to real problems, there is very little science in this work that one would ever apply. Geologists may find some value here, but I suspect that there are more complete and more specialized books available.

Geology for Geotechnical Engineers provides an account of the very basic geology that is essential for the geotechnical engineer in a readable, digestible and informative manner, so that the reader will feel encouraged to extend his study in this field, even though he will find few more advanced works more readable.

The first three chapters of this book deal with the origin and generation of rocks and soils as we know them, without the jargon that one normally associates with the standard geological text. The Earth and its history are disposed of in only nine

pages, which eschew turgid technical debate. The 40-page chapter on rock types is a model of clarity and persuades the reader that this is a fascinating subject which he would wish to pursue in more detail. The least attractive chapter is undoubtedly that on mapping, in which the author has been only moderately successful in putting a difficult subject across.

This book should be required reading for all civil engineering undergraduates. Although it is to some extent superficial, it should arouse interest and awaken enthusiasm.

Geotechnical Engineering is an excellent text for civil and geotechnical engineering undergraduates, beginning postgraduates, and practising engineers. Many similar texts are quite suitable for teaching, but pretty useless outside the classroom; others are ideal for the practising engineer but little use in the classroom. Here we have a text which is reasonably comprehensive and deals with more than "textbook" matters.

Chapter two, on soil variability, includes a short but perfectly adequate course in statistics, which emphasizes that here we are not dealing with precise man-made structural materials, but rather the various products of the Earth's deformation. The authors devote a very substantial and outstandingly good chapter to the cornerstones of geotechnical engineering - the whole area of strength and

deformation - in which they have not allowed themselves to be bogged down in the detailed refinements of triaxial testing.

The chapter which gives me most cause for concern, however, is that devoted to consolidation and settlement, an area in which the engineer is expected to forecast the amount of settlement of a structure and the time that will be required for that settlement to occur. As the forecast can be checked for accuracy by anyone at all familiar with the surveyor's level over the years following construction, there is no hidden safety factor; we are talking to absolutes. This chapter is net at all helpful in this context: although the theories expounded are elegant, abundant and thorough, at the end of the day the engineer is on his own.

Other chapters take the reader logically through the fundamental areas of geotechnical engineering - seepage flow, retaining structures, stability of slopes, foundations and soil treatment. The material covered is up to date and moderately comprehensive and there is an excellent bibliographical section for the pursuit of any topic.

Geotechnical Engineering is a text for the design of foundations and earth structures, and the design of earth structures. The civil engineer is not frequently associated with structures of steel and concrete, artificial materials manufactured with selected materials under conditions which enable sensible predictions of the properties and characteristics of the finished material to be made, with a relatively easy mind.

The author concentrates on what he calls "design for performance" as a basis for "design for strength" with "design for manufacture" with promising-looking chapter headings, such as "modelling", "flow field", "design with fluid flow", "heat transfer", "design with heat transfer", and "boiler design: evaluation and optimisation" - all in 162 pages.

After the briefest of outlines of the relationship between what should be treated as inseparable aspects of design (and strangely with no mention of the starting-point, the concept of failure) and the exploration of all the options leads to an outline specification of the problem and the unlikely juxtaposition of the failure of the Comet aircraft and the Tay Bridge, there is really no further serious consideration of design, as generally understood, in the remaining text.

The "modelling" of engineering systems and components has been a major development during the past decade, including new ideas from control theory, systems analysis, computer simulation and parametric design. Under "modelling" the designer is urged to reduce the "real-world" problem to a mathematical model, but the text only deals with the simple analysis of standard elementary relationships expressed in mathematical symbols, for example, power to pump water, or efficiency of a jet or propeller thrust system. Most engineering teachers would regard this type of treatment as the normal application of analysis in their specialized subjects, and not as design, which is essentially a process of synthesis. The useful tool of dimensional analysis is superficially discussed for just three pages.

The chapters on fluid flow contain reviews of the usual first-year

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BOOKS

ENGINEERING

Bond graphs

Bond Graphs for Modelling Engineering Systems
by Alan Blundell
Wiley, £16.50 and £8.50
ISBN 0 85312 510 4 and 519 8

In the preface to his book Alan Blundell outlines the many areas in which bond graphs have been used to determine the dynamic behaviour of physical and socio-economic systems. He aims to offer a broad treatment of the use of bond graphs, particularly in engineering systems.

The nature of the bond graph as a graphical representation of the power flows within a system by a line or bond, much in the manner of the use of the chemical bond in models of molecular structure, is outlined. Each bond represents the two energy components which together make up the power flow, such as voltage and current for an electrical system or pressure and flow for a hydraulic one. Of the two co-variables only one can be independent and cause a particular behaviour. This is known as causality - introduced in chapter two as a prelude to the application of what is termed the single loop rule - and owes its origins to Mannon's rule from classical control theory.

Unfortunately, although many interesting examples are given of physical systems and their bond graphs, the reader has been left to determine for himself the basic system elements that are used to make up the bond graph and which forms its most attractive feature. At no point in the book is Paynter's tetrahedron of state, which describes the relationship between the power variable, its co-variables (effort and flow) and their integrals (momentum and displacement) and the dynamic energy stores, which may be inertial or compliant, and the energy dissipation given. By the time the book moves into the use of matrices for the analysis of complex systems, the bond graphs given add very little understanding, as for the majority of the examples the bond graph is just given and must be taken at face value. Little attempt has been made to take the reader through the process of forming the bond graph from an understanding of the physics of the system, a facility that is the greatest virtue of the use of bond graphs.

Although some of the examples are interesting, they are invariably either electrical or mechanical, and very little of the interdisciplinary nature of the bond graph is provided. No mention is made of thermal, thermodynamic and fluid mechanical problems in which bond graphs en-

able dynamic models to be developed which would be extremely difficult by other means. Some of the examples - for example, the dynamic behaviour of a Bourdon pressure gauge - are misleading, showing a lack of understanding of the underlying physics. In this example, the Bourdon tube is represented as a piston operating against a damped spring mass system, and the bond graph shown with the piston represented by a transformer acting between the applied pressure at the torque on the pointer. In practice the transformation of the hydrostatic pressure in the tube is first to the tube material in the stress-strain domain, which is then transformed by a non-linear mechanism to the torsional translation of the pointer - a very different system to that described.

There is definitely a need for a new book in the field of bond graphs and their applications to the design and analysis of multivariable systems, which is now a well developed international technique currently being developed for undergraduate teaching. Alan Blundell's book, although it appears at an opportune time, is rather disappointing in not giving a clear view of the potential of bond graphs and their application.

J. E. Sharpe

J. E. Sharpe is lecturer in engineering design at Queen Mary College, London, and a Royal Society/SERC Industrial Fellow at GEC.

Solar energy

Treatise on Solar Energy
Volume 1: Fundamentals of Solar Energy
by H. P. Garg
Wiley, £24.50
ISBN 0 471 10180 X

As its title correctly implies, this book of almost 600 pages is a comprehensive reference text, containing a wealth of data collected with care from the solar energy and heat transfer literature of the past fifty years. The book reflects the long experience of Professor Garg in this field, and his international contacts have certainly helped him to draw together much of the important material which has been written on solar energy in recent years. Though aimed primarily at postgraduate students and researchers in physics and the applied sciences, the book should also serve as a reference for undergraduate project work.

The book is the first volume of a three-volume series, and limits itself almost entirely to the thermal conversion of solar energy with its associated problems of heat transfer. The first chapter is strangely out of keeping with the rest of the book, as it contains a broad review of world energy resources and concludes by urging the reader to develop the use of solar energy because fossil fuel



Southern California Edison's giant 3 megawatt wind turbine at its Wind Energy Center near Palm Springs, California. Taken from *Solar Prospects: the potential for renewable energy* by Michael Flood, published by Willwood House at £6.95.

resources are rapidly running out. Various statistical data are presented on the reserves and utilization of fossil fuels including some unusual data on the less well studied fuels such as firewood in the developing countries. However, much of this introductory material is already looking rather dated, and it will surely not be long before most readers simply ignore it.

The genuine reference text begins in chapter two with a discussion of solar radiation. This includes, after the necessary equations for the computation of solar angles, and so on, an interesting historical account of the controversy which has surrounded measurements of the solar constant. On the measurement of solar radiation itself, there is a brief review of some of the available instruments (with pictures), the specialist, however, might wish to look further than this review for an up-to-date report on this topic. The chapter ends with some tables of solar irradiation for key cities around the world, and includes extra details for the author's home country of India. Chapter three contains most of the material usually taught in undergraduate courses on heat transfer and fluid mechanics, but it is presented here using examples from the solar energy field. It will certainly be useful to have all this material in one text. Chapter four presents detailed optical data for most of the materials which are used in solar collectors and in buildings. Spectral absorptance and transmittance curves are included for a range of plastics as well as for common materials such as glass and water. Radiatively selective surfaces are also discussed and the properties of the more common surfaces tabulated. The chapter concludes with a brief review of the equipment available for measuring the optical properties of materials.

However, despite these shortcomings, this book will undoubtedly be widely used. Although *Solar Engineering of Thermal Processes* by J. A. Duffie and W. A. Beckman (Wiley, 1980) is perhaps its closest competitor, this new treatise has a somewhat wider scope and contains a good deal more material in the general field of heat transfer.

W. B. Gillett

W. B. Gillett is a senior engineer with Sir William Halcrow and Partners (Consulting Engineers), Swindon.

Boundary elements

Boundary Element Methods in Solid Mechanics, with applications in rock mechanics and geological engineering by S. L. Crouch and A. M. Starfield
Allen & Unwin, £20.00
ISBN 0 04 620010 X

Before the development of computers, only the simplest problems of stress analysis could be solved. By 1965, however, approximate analyses of stress in bodies of irregular shape (domains) were being performed, using finite element methods. This required solving simultaneous equations in unknowns at nodes distributed over the surface or boundary of the domain and throughout its interior. In three-dimensional analysis, reasonably accurate calculations for a domain of relatively simple geometry could involve the solution of over ten thousand simultaneous equations. Even with today's hardware and optimized finite element software, computing cost and system reliability considerations impose severe limitations; and because cost and system requirements increase steeply with problem size, continuing improvement of hardware offers no foreseeable salvation.

Boundary element methods eliminate the unknowns at interior nodes. There are several such methods, all requiring the solution of a boundary integral equation. The boundary is represented by elements over each of which is assumed some variation of the unknown function appearing in the integral equation, and simultaneous equations for boundary nodal values are constructed and solved. Until 1970 straight line and flat triangular elements were used and unknown functions were assumed to be constant over each. Large numbers of elements were required to obtain good results, so computing cost was high. Since then, elements which may be curved and over which linear, quadratic and cubic functional variation is assumed have been developed, with the aim of improving computational efficiency.

Crouch and Starfield are specialists in displacement discontinuity elements. In their book they describe fictitious loads, displacement discontinuity and direct formulation elements for the analysis of plane strain, and displacement discontinuity elements for three-dimensional analysis of tabular orebodies. They do not consider the general three-dimensional problem. The domain is considered elastic, isotropic, orthotropic, piecewise homogeneous. The elements are straight line segments or flat rectangles, and unknown functions are assumed constant over each, except for direct formulation in which linear variation is also presented.

Although the authors' declared intention is to keep the mathematics simple, they produce complicated algebra by evaluating equivalent coefficients by analytical rather than numerical integration, and by referring to tangential and normal components of functions rather than their global cartesian components. Fortran programs are presented; these are elegant and efficient, but serve to illustrate an introductory text.

However, the book is well written, and care has been taken to eliminate typographical errors in equations. Fortunately, the authors confine themselves to an exposition of techniques they have used rather than attempting to cover the whole field. They are particularly experienced in the analysis of geotechnical problems, and in the final chapter they very effectively demonstrate the use of displacement discontinuities to model joints in rock and the progressive failure of these joints.

The book is of interest to all requiring an introductory text, and is of special interest to geotechnical engineers. Those concerned with the pursuit of high computational efficiency, however, must read more widely.

J. O. Watson

J. O. Watson is a lecturer in rock mechanics at Imperial College, London.

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Further particulars from the College Secretary, St. Hugh's College, Oxford, to whom applications should be sent by Wednesday, 4th May, 1983.

THE UNIVERSITY COLLEGE OF WALES ABERYSTWYTH

CHAIR OF ZOOLOGY

The College Council invites applications for appointment to the Chair of Zoology.
Further particulars can be obtained from The Registrar, (Staffing Office), The University College of Wales, Old College, King Street, Aberystwyth, Dyfed, SY23 2AX, Wales, U.K. (Tel: 0970 1177, Ext. 207), by whom applications (12 copies) together with the names of three referees, should be received not later than Monday, 18th May, 1983.
Applicants from overseas may submit one application by airmail. The College reserves the right to fill the Chair by invitation.

nihe
limerick

Planned as Ireland's first technological university, the NIHE Limerick has gained widespread recognition for its major contribution to the recent rapid expansion of high technology manufacturing industry. Construction is underway on a major extension which will double the size of the 3,000 student residence campus and as a result there is an immediate vacancy in the College of Engineering and Science for:

INDUSTRIAL CHEMISTRY
ASSISTANT LECTURER

Applicants should have a relevant postgraduate degree and a proven ability to use advanced research and analytical techniques. Specific experience in one of the following areas is required:

A) CHEMICAL ENGINEERING - MASS TRANSFER OR PROCESS CONTROL
B) ORGANIC CHEMISTRY - FINE CHEMICALS PROCESSING OR MICROBIOLOGICAL CHEMICALS PRODUCTION

Candidates must also demonstrate desire and aptitude to teach at both undergraduate and postgraduate levels, to liaise with industry, and to initiate research or assist with existing research programmes.

SALARY SCALE: £12,781 - £15,135 p.a.
Application material available from the Personnel Office, The National Institute for Higher Education, Limerick, Ireland should be completed and returned by Friday, 13th May, 1983.

BRUNEL UNIVERSITY

Lectureship in Engineering for THE SPECIAL ENGINEERING PROGRAMME

SEP is a prominent and highly successful 'enhanced' undergraduate engineering programme. It is intensive and broad based and has many distinctive features. It attracts the most able and highly motivated school leavers. The Department of Engineering and Management Systems, responsible for SEP, now seeks an additional Lecturer for the SEP team. Applicants must be well qualified, creative, energetic and committed to the SEP approach. For such persons, the post offers outstanding opportunities and a considerable challenge in teaching, and in research.

Applications from candidates with qualifications in ELECTRICAL OR ELECTRONIC ENGINEERING, COMPUTING, COMMUNICATIONS, CONTROL, PRODUCTION ENGINEERING, SYSTEMS are particularly welcome.

Salary in the Lecturer scale £28,375-£33,505, plus £1,168 London Allowance per annum with USS benefits.

Application forms and further particulars from the Personnel Secretary, Brunel University, Uxbridge, Middlesex, UB8 3PH, or telephone Uxbridge 37188, Ext. 48. Closing date: 6th May, 1983.

SEP

THE UNIVERSITY OF SUSSEX

In the School of European Studies

Lecturer in French with special interest in the literature and thought of nineteenth and twentieth century France, from 1st October, 1983.

Temporary Lecturer in German specialising in German literature and thought or German literature and history in the Twentieth Century for one year from 1st October, 1983.

In the School of Social Sciences

Temporary Lectureship in Social Psychology and Temporary Lectureship in Artificial Intelligence for one year from 1st October, 1983.

Salaries in the Lecturer scale £28,375 to £33,505 per annum plus membership of USS. Temporary appointments will be made in the lower part of the scale.

Further particulars and application forms are available from the Personnel Office, Sussex House, University of Sussex, Brighton, BN1 9QH (Tel: Brighton 606755; Ext. 434; Mr Atkins) quoting reference 432/6.

Appointments

Universities
Fellowships
Research and Studentships
Polytechnics
Colleges of Higher Education
Colleges with Teacher Education
Colleges and Institutes of Technology

Technical Colleges
Colleges of Further Education
Colleges and Departments of Art Administration
Overseas Adult Education Librarians
General Vacancies
Industry and Commerce

Other classifications

Exhibitions
Awards
Conferences and Seminars
Courses

Personal
For Sale and Wanted
Holidays and Accommodation

UNIVERSITY OF OXFORD

'New Blood' appointments in Science (including Clinical Medicine and Mathematics)

Applications are invited for the following university lectureships tenable from 1 October 1983.

It is intended that these appointments should be held in conjunction with a college fellowship. Further particulars of the university lectureships, and of relevant college posts, may be obtained from the head of the department indicated in each case, to whom applications (ten typed copies, or one from overseas applicants) should be sent. (Separate application is not necessary for an associated college post.) The closing date for receipt of applications is 11 May 1983.

AGRICULTURAL SCIENCE AND BOTANY: Application of Physical Techniques to Plant Biochemistry. (This is a joint appointment between the two departments, but enquiries and applications should be addressed to the Department of Agricultural Science, Parks Road, Oxford OX1 3PF. Telephone Oxford (0865) 572465.)

BIOCHEMISTRY: Enzymology (with emphasis on Enzyme Mechanisms). (Department of Biochemistry, South Parks Road, Oxford OX1 3QU. Telephone Oxford (0865) 511261.)

CLINICAL MEDICINE: Infectious Diseases and Tropical Medicine. (Nuffield Department of Clinical Medicine, John Radcliffe Hospital, Headington, Oxford OX3 9DU. Telephone Oxford (0865) 517832.)

EXPERIMENTAL PSYCHOLOGY: Brain and Behaviour Research. (Department of Experimental Psychology, South Parks Road, Oxford OX1 3UD. Telephone Oxford (0865) 512251.)

INORGANIC CHEMISTRY: Synthesis of New inorganic Materials. (Inorganic Chemistry Laboratory, South Parks Road, Oxford OX1 3QR. Telephone Oxford (0865) 53424.)

ENGINEERING SCIENCE: Soil Mechanics. (Department of Engineering Science, Parks Road, Oxford OX1 3PL. Telephone Oxford (0865) 59883.)

MATHEMATICS: (1) Relativity (especially Tensor Theory) (2) Geometry (including Topology). (Mathematical Institute, 24-29 St. Giles, Oxford OX1 3LB. Telephone Oxford (0865) 54289.)

METALLURGY AND SCIENCE OF MATERIALS: Development of New High-strength Cement-based materials for Engineering Applications. (Department of Metallurgy and Science of Materials, Parks Road, Oxford OX1 3PH. Telephone Oxford (0865) 59851.)

OBSTETRICS AND GYNAECOLOGY: Human Fetal Development. (Nuffield Department of Obstetrics and Gynaecology, John Radcliffe Hospital, Headington, Oxford OX3 9DU. Telephone Oxford (0865) 517871.)

ORGANIC CHEMISTRY: (1) Bio-organic Chemistry. (Dyson Perrins Laboratory, South Parks Road, Oxford OX1 3QY. Telephone Oxford (0865) 57809.)

PHYSIOLOGY: Physiology of Excitable Membranes. (University Laboratory of Physiology, South Parks Road, Oxford OX1 3PT. Telephone Oxford (0865) 67451.)

PSYCHIATRY: Cognitive Processes in the Treatment and Prevention of Physical and Psychological Illness. (Department of Psychiatry, Warneford Hospital, Oxford OX3 7JX. Telephone Oxford (0865) 245661.)

SURGERY: Transplantation Immunology. (Nuffield Department of Surgery, John Radcliffe Hospital, Headington, Oxford OX3 9DU. Telephone Oxford (0865) 517868.)

THEORETICAL PHYSICS: Theoretical Elementary Particle Physics. (Department of Theoretical Physics, 1 Keble Road, Oxford OX1 3NR. Telephone Oxford (0865) 63261.)

A MAJOR NEW SERIES FOR STUDENTS OF ELECTRONIC ENGINEERING TUTORIAL GUIDES IN ELECTRONIC ENGINEERING

Series editors: G. G. Bloodworth, York University
A. P. Davy, Southampton University
J. K. Fidler, Essex University

The Tutorial Guides, aimed at first and second year undergraduates, present a new approach to leading electronics engineering by combining the latest integrated circuit methods with more classical fundamental areas of study.

Each text is complete in itself but is linked with others in the series.

- Includes worked examples, graded problems and answers.
- Marginal notes are a key feature of this new series.
- Uses integrated circuit approach.
- Topical coverage.

Lecturers may obtain inspection copies or further information by writing to:
Roger Horton, Inspection Copy Department, Van Nostrand Reinhold (UK), Millers Lane, Wokingham, Berks, RG11 2AY. Tel: (0734) 789485.

VAN NOSTRAND REINHOLD (U.K.)

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FEEDBACK CIRCUITS AND OP AMPS
D. H. Horrocks, University College Cardiff
128 pages. Cloth 0 442 30564 0. £10.50
Paper 0 442 30566 9. £ 5.25

Just Published
TRANSISTOR CIRCUIT TECHNIQUES
discrete & integrated
G. J. Ritchie, Essex University
178 pages. Cloth 0 442 30631 1. £10.50
Paper 0 442 30633 8. £ 5.25

Forthcoming
COMPUTER SYSTEMS, Late '83
TELECOMMUNICATIONS, Early '84
DIGITAL CIRCUITS, Early '84

Universities continued

University of Birmingham

LECTURESHIPS

Following the UGC's announcement of its allocations to universities for "new blood" appointments, applications are invited from suitably qualified graduates for LECTURESHIPS in the following areas:

A. Faculty of Science and Engineering

- (1) Department of Physics - Particle Physics
Candidate to work initially on the UAT Experiment at CERN and subsequently on LEP. (Ref: D3)
- (2) Department of Space Research - X-ray Astronomy
Candidate required with established skills in the interpretation of observational data relating to cosmic X-ray sources, in support of the Department's active experimental programme. (Ref: E1)
- (3) Department of Genetics - Inter-specific Gene Transfer
Applicants must possess a good honours degree in a biological science with postgraduate experience in the cytochrome and biometrical genetics of flowering plants. (Ref: L1)
- (4) Department of Biochemistry - Biochemical Toxicology
Candidates should have a special interest in the investigation of the mechanisms by which xenobiotics cause toxicity using studies in vivo and in isolated cell cultures and suspensions. (Ref: B3)
- (5) Department of Civil Engineering - Groundwater Hydrology
Applicants must be Civil Engineering graduates who have experience in the mechanics of fluid flow, preferably in ground-water. (Ref: Q5)
- (6) Department of Chemical Engineering - Chemical Processing of Solids
Enquiries are particularly invited from chemical engineers with interests in this area. Practical, theoretical or computing/image analysis skills will be welcome. (Ref: T3)
- (7) Centre for Computing and Computer Science - INFORMATION TECHNOLOGY
Lectureship for MSc Conversion Course in Computer Science.
Candidates preferred with expertise in one or more of the areas of Information Technology, Networks or Programming or System Design Methodologies. (Ref: Z1)

B. Faculty of Medicine and Dentistry

- (1) Department of Anatomy - Cell Biology
Lecturer sought to expand the Department's interest in cellular differentiation, its regulation and control. (Ref: LANT/183)
 - (2) Department of Medicine - Molecular Biochemistry
The Department is concerned with control mechanisms regulating the synthesis and secretion of pituitary and other hormones and wishes to study these aspects at a more basic molecular level. (Ref: L/MC/D583)
- It is expected that those appointed will be aged 35 years or less. Starting salary, according to age and experience, will be in the range £8,375 to £13,505 per annum, plus superannuation.
- Further information about the posts is available from the Abolent Registrar, Science and Engineering (Tel: 021-472 1301, Ext. 2559) for posts A(1) to A(7) or the Assistant Registrar, Medical School (Tel: 021-472 1301, Ext. 3377) for posts B(1) and B(2).
- Applications (3 copies), including a curriculum vitae, the names of three referees and quoting the reference number of the post, should be sent to the appropriate Assistant Registrar, at the address below, by 9th May, 1983.
- University of Birmingham, P.O. Box 363, Birmingham B15 2TT.

University of Strathclyde

DEPARTMENT OF INDUSTRIAL RELATIONS

Applications are invited for an appointment as senior lecturer in the Department of Industrial Relations. Candidates should have a proven teaching and research record in training industrial relations. Practical industrial relations experience on either side of industry will also be welcomed. In addition, candidates will be expected to have a proven record at administrative ability since they will be expected to undertake substantial departmental duties and when appropriate, to dispense for the Head of Department.

The successful candidate will be expected to take up the appointment not later than 1st October, 1983. Salary will be in the range £12,920 to £16,180 per annum, USS benefit.

Further particulars may be obtained from, Academic Staff Office, University of Strathclyde, 16 Richmond Street, Glasgow G1 1XW. Closing date: 8th May, 1983.

UNIVERSITY OF EAST ANGLIA

LECTURER IN COMPUTING STUDIES

Applications are invited for this post established from 1st October, 1983 under the UGC Information Technology Initiative.

Salary on the scale £8,375-£13,505 per annum (under review) plus USS benefits.

Preference will be given to well qualified candidates with strong research interests in the programming language aspects of intelligent knowledge based systems. The successful candidate will be expected to work jointly with Dr. Shep's group concerned with declarative programming and Professor Stocker's data base group.

Applications (three copies) giving names of three referees to whom reference may be made should be lodged with the Establishment Officer, University of East Anglia, Norwich NR4 7JY from whom further particulars may be obtained not later than 14th May, 1983.

No forms of application are issued.

AUSTRALIA

University of Western Australia

LECTURER IN FRENCH

Qualifications required: a higher degree, preferably a doctoral level, and an ability to teach and to undertake research in French language and literature. The successful candidate will be expected to contribute to the Department's teaching programme in the field of French language and literature. The successful candidate will be expected to contribute to the Department's research programme in the field of French language and literature. The successful candidate will be expected to contribute to the Department's research programme in the field of French language and literature.

University of Melbourne

LECTURER (CONTINUING/LIMITED TENURE) and LECTURER (LIMITED TENURE) in the DEPARTMENT OF ACCOUNTING

Applications are invited for appointment to the above positions in the Department of Accounting. The successful candidate will be expected to contribute to the Department's teaching programme in the field of accounting. The successful candidate will be expected to contribute to the Department's research programme in the field of accounting.

University of Adelaide

LECTURER IN POLITICS (A1286) (Tenure)

Applications are invited for this post established from 1st October, 1983 under the UGC Information Technology Initiative.

Salary on the scale £8,375-£13,505 per annum (under review) plus USS benefits.

Preference will be given to well qualified candidates with strong research interests in the programming language aspects of intelligent knowledge based systems. The successful candidate will be expected to work jointly with Dr. Shep's group concerned with declarative programming and Professor Stocker's data base group.

University of Western Australia

LECTURER IN PHYSIOLOGY

Applications are invited for appointment to the above position in the Department of Physiology. The successful candidate will be expected to contribute to the Department's teaching programme in the field of physiology. The successful candidate will be expected to contribute to the Department's research programme in the field of physiology.

University of Melbourne

LECTURER (CONTINUING/LIMITED TENURE) and LECTURER (LIMITED TENURE) in the DEPARTMENT OF ACCOUNTING

Applications are invited for appointment to the above positions in the Department of Accounting. The successful candidate will be expected to contribute to the Department's teaching programme in the field of accounting. The successful candidate will be expected to contribute to the Department's research programme in the field of accounting.

University of Adelaide

LECTURER IN POLITICS (A1286) (Tenure)

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Salary on the scale £8,375-£13,505 per annum (under review) plus USS benefits.

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Universities continued

LOUGHBOROUGH UNIVERSITY OF TECHNOLOGY

LECTURER

Applications are invited for the post of LECTURER in the Department of Post and Information Studies. The post will primarily be concerned with the teaching of management, in theory and practice to undergraduate and postgraduate students. Sound management experience in a large organisation would be an advantage, together with some teaching experience.

University of Hong Kong

READERSHIP/ SENIOR LECTURESHIP/ LECTURESHIP IN PERIODONTOLOGY AND PUBLIC HEALTH

Applications are invited for the above positions in the Department of Periodontology and Public Health. The successful candidate will be expected to contribute to the Department's teaching programme in the field of periodontology and public health. The successful candidate will be expected to contribute to the Department's research programme in the field of periodontology and public health.

University of Swaziland

SENIOR LECTURER IN ANIMAL PRODUCTION AND HEALTH

Applications are invited for the above position in the Department of Animal Production and Health. The successful candidate will be expected to contribute to the Department's teaching programme in the field of animal production and health. The successful candidate will be expected to contribute to the Department's research programme in the field of animal production and health.

University of Swaziland

PROFESSOR OF CROP PRODUCTION

Applications are invited for the above position in the Department of Crop Production. The successful candidate will be expected to contribute to the Department's teaching programme in the field of crop production. The successful candidate will be expected to contribute to the Department's research programme in the field of crop production.

LOUGHBOROUGH UNIVERSITY OF TECHNOLOGY

ENGINEERING DESIGN

Applications are invited from graduates for a LECTURESHIP in the Department of Mechanical Engineering. The appointment is for three years in the first instance. Salary within the scale £6,375 to £13,505; the appointment will be made in the lower half of the scale.

University of Hong Kong

READERSHIP/ SENIOR LECTURESHIP/ LECTURESHIP IN PERIODONTOLOGY AND PUBLIC HEALTH

Applications are invited for the above positions in the Department of Periodontology and Public Health. The successful candidate will be expected to contribute to the Department's teaching programme in the field of periodontology and public health. The successful candidate will be expected to contribute to the Department's research programme in the field of periodontology and public health.

University of Swaziland

SENIOR LECTURER IN ANIMAL PRODUCTION AND HEALTH

Applications are invited for the above position in the Department of Animal Production and Health. The successful candidate will be expected to contribute to the Department's teaching programme in the field of animal production and health. The successful candidate will be expected to contribute to the Department's research programme in the field of animal production and health.

University of Swaziland

PROFESSOR OF CROP PRODUCTION

Applications are invited for the above position in the Department of Crop Production. The successful candidate will be expected to contribute to the Department's teaching programme in the field of crop production. The successful candidate will be expected to contribute to the Department's research programme in the field of crop production.

University of The South Pacific

Appointments are invited from suitably qualified persons for the post of HEAD OF EDUCATION EXTENSION SERVICES (83/25).

University of The West Indies

SENIOR PROGRAMMING CONSULTANTS (SENIOR LECTURER/ GRADE)

Computer Centre, Mona, Jamaica. Applications are invited from suitably qualified persons for the post of SENIOR PROGRAMMING CONSULTANTS (SENIOR LECTURER/ GRADE). The successful candidate will be expected to contribute to the Department's teaching programme in the field of programming. The successful candidate will be expected to contribute to the Department's research programme in the field of programming.

University of Swaziland

LIBRARIAN

Applications are invited from suitably qualified persons for the post of LIBRARIAN. The successful candidate will be expected to contribute to the Department's teaching programme in the field of librarianship. The successful candidate will be expected to contribute to the Department's research programme in the field of librarianship.

University of Surrey

SENIOR LECTURER IN LAW AND HEAD OF LAW SECTION

Following Dr. P. D. Casson's appointment to the Readership in Law, the University of Surrey is seeking a Senior Lecturer in Law and Head of Law Section. The successful candidate will be expected to contribute to the Department's teaching programme in the field of law. The successful candidate will be expected to contribute to the Department's research programme in the field of law.

University of Manchester

LECTURER IN ART GALLERY AND MUSEUM STUDIES

Applications are invited for the above position in the Department of Art Gallery and Museum Studies. The successful candidate will be expected to contribute to the Department's teaching programme in the field of art gallery and museum studies. The successful candidate will be expected to contribute to the Department's research programme in the field of art gallery and museum studies.

University of Hong Kong

Applications are invited from suitably qualified persons for the post of LECTURESHIP IN COMPUTER STUDIES (Ref: 548/156).

University of Aston

LECTURESHIPS IN INFORMATION TECHNOLOGY

The University Grants Committee has selected a number of Universities in which to fund LECTURESHIPS in INFORMATION TECHNOLOGY. The successful candidate will be expected to contribute to the Department's teaching programme in the field of information technology. The successful candidate will be expected to contribute to the Department's research programme in the field of information technology.

University of Kent

TEMPORARY LECTURESHIP IN SOCIAL POLICY AND ADMINISTRATION

Applications are invited for the above position in the Department of Social Policy and Administration. The successful candidate will be expected to contribute to the Department's teaching programme in the field of social policy and administration. The successful candidate will be expected to contribute to the Department's research programme in the field of social policy and administration.

University of Swaziland

LECTURER IN AGRICULTURAL EXTENSION

Applications are invited for the above position in the Department of Agricultural Extension. The successful candidate will be expected to contribute to the Department's teaching programme in the field of agricultural extension. The successful candidate will be expected to contribute to the Department's research programme in the field of agricultural extension.

University of Kent

TEMPORARY LECTURER IN MANAGEMENT SCIENCE

Applications are invited for the above position in the Department of Management Science. The successful candidate will be expected to contribute to the Department's teaching programme in the field of management science. The successful candidate will be expected to contribute to the Department's research programme in the field of management science.

University of Aston

Applications are invited from suitably qualified persons for the post of LECTURESHIP IN INFORMATION TECHNOLOGY (Ref: 548/156).

University of Kent

TEMPORARY LECTURESHIP IN SOCIAL POLICY AND ADMINISTRATION

Applications are invited for the above position in the Department of Social Policy and Administration. The successful candidate will be expected to contribute to the Department's teaching programme in the field of social policy and administration. The successful candidate will be expected to contribute to the Department's research programme in the field of social policy and administration.

University of Swaziland

LECTURER IN AGRICULTURAL EXTENSION

Applications are invited for the above position in the Department of Agricultural Extension. The successful candidate will be expected to contribute to the Department's teaching programme in the field of agricultural extension. The successful candidate will be expected to contribute to the Department's research programme in the field of agricultural extension.

University of Kent

TEMPORARY LECTURER IN MANAGEMENT SCIENCE

Applications are invited for the above position in the Department of Management Science. The successful candidate will be expected to contribute to the Department's teaching programme in the field of management science. The successful candidate will be expected to contribute to the Department's research programme in the field of management science.

University of Aston

LECTURESHIP IN INFORMATION TECHNOLOGY

The University Grants Committee has selected a number of Universities in which to fund LECTURESHIPS in INFORMATION TECHNOLOGY. The successful candidate will be expected to contribute to the Department's teaching programme in the field of information technology. The successful candidate will be expected to contribute to the Department's research programme in the field of information technology.

University of Aston

Applications are invited from suitably qualified persons for the post of LECTURESHIP IN INFORMATION TECHNOLOGY (Ref: 548/156).

University of Kent

TEMPORARY LECTURESHIP IN SOCIAL POLICY AND ADMINISTRATION

Applications are invited for the above position in the Department of Social Policy and Administration. The successful candidate will be expected to contribute to the Department's teaching programme in the field of social policy and administration. The successful candidate will be expected to contribute to the Department's research programme in the field of social policy and administration.

University of Swaziland

LECTURER IN AGRICULTURAL EXTENSION

Applications are invited for the above position in the Department of Agricultural Extension. The successful candidate will be expected to contribute to the Department's teaching programme in the field of agricultural extension. The successful candidate will be expected to contribute to the Department's research programme in the field of agricultural extension.

University of Kent

TEMPORARY LECTURER IN MANAGEMENT SCIENCE

Applications are invited for the above position in the Department of Management Science. The successful candidate will be expected to contribute to the Department's teaching programme in the field of management science. The successful candidate will be expected to contribute to the Department's research programme in the field of management science.

University of Aston

LECTURESHIP IN INFORMATION TECHNOLOGY

The University Grants Committee has selected a number of Universities in which to fund LECTURESHIPS in INFORMATION TECHNOLOGY. The successful candidate will be expected to contribute to the Department's teaching programme in the field of information technology. The successful candidate will be expected to contribute to the Department's research programme in the field of information technology.

Polytechnics continued

HUDDESFIELD POLYTECHNIC
Faculty of Arts
Department of Humanities
RESEARCH ASSISTANT
REF: R31
Applications are invited from good honours graduates in politics or related disciplines for an appointment as Research Assistant, to work on a project entitled 'The Political Economy of British Corporate Investment in the Third World'. The successful candidate will be expected to register for a higher degree with the Council for National Academic Awards.
Road Term Contract for 2 years.
Salary: Research A Scale £16,800-£21,130.
Further details and application forms to be returned by 28th April, 1983, are available from the Dean of Research, Office, The Polytechnic, Queensgate, Huddersfield HD1 3QH, Tel: (0484) 22208, Ext. 204.

PLYMOUTH POLYTECHNIC
FACULTY OF TECHNOLOGY
Department of Mathematics, Statistics and Computing
Research Assistantship
Applications are invited from candidates with or expecting to obtain good honours degrees in Mathematics or an appropriate engineering discipline for the following research project:
1. Mathematical prediction of the dynamic properties of vulcanised elastomers.
2. The role of Hadamard stability in the theory of rubberlike solids.
Research assistants are expected to register for a CNA A higher degree.
Appointments are for a period of two years with a possibility of a third year (fixed term contract).
Salary: £5,355 to £6,039
Application forms to be returned by Monday, 18th May, 1983 can be obtained from the Personnel Office, Plymouth Polytechnic, Drake Circus, Plymouth, PL4 8AA.

Teeside Polytechnic
Department of Business and Professional Studies
PRINCIPAL ACCOUNTANT
A responsible post, based in the accounts department, reporting to the Director of Finance. The successful candidate will be responsible for the day-to-day running of the accounts department, including the preparation of the annual accounts, and will be expected to register for a higher degree with the Council for National Academic Awards.
Salary: £11,331-£13,880 (fixed term, 3 years, 1st September 1983 to 31st August 1986).
The salary on appointment will be £11,331 per annum.
Closing date for applications: 28 April 1983.

LECTURER II IN ECONOMICS INCLUDING QUANTITATIVE METHODS
(Re-advertisement)
The ability to teach and supervise students in the areas of economics, including microeconomics, macroeconomics, and quantitative methods. The successful candidate will be expected to register for a higher degree with the Council for National Academic Awards.
Salary: £6,000-£10,172 (efficiency related, 1st April 1983 to 31st August 1986).
The salary on appointment will be £6,000 per annum.
Closing date for applications: 28 April 1983.

Preston Polytechnic
Re-advertisement
Applications are invited for the post of
HEAD OF FASHION
Salary scale: Head of Department £16,800-£21,130.
Details and application forms to be returned by 28th April 1983, are available from the Dean of Research, Office, The Polytechnic, Queensgate, Huddersfield HD1 3QH, Tel: (0484) 22208, Ext. 204.

Examiners
Royal Society of Arts
Examinations Board
Applications are invited for the following:
DIPLOMA IN LANGUAGES FOR INTERNATIONAL TRADE
Chief Examiner for this examination is required to test candidates in the use of the English language in international trade and business contexts. The successful candidate will be expected to register for a higher degree with the Council for National Academic Awards.
Salary: £16,800-£21,130 (fixed term, 3 years, 1st September 1983 to 31st August 1986).
Closing date for applications: 28 April 1983.

King Alfred's College
Winchester
RESEARCH ASSISTANT
Required for two years, commencing in October, 1983. In this innovative department, which has been designated a centre for research in the field of inter-disciplinary study, the successful candidate will be expected to register for a higher degree with the Council for National Academic Awards.
Salary: £16,800-£21,130 (fixed term, 3 years, 1st September 1983 to 31st August 1986).
Closing date for applications: 28 April 1983.

University of Warwick
School of Law
SRSC RESEARCH STUDENTSHIPS
Applications are invited for SRSC Research Studentships in the field of Law. The successful candidate will be expected to register for a higher degree with the Council for National Academic Awards.
Salary: £16,800-£21,130 (fixed term, 3 years, 1st September 1983 to 31st August 1986).
Closing date for applications: 28 April 1983.

Colleges of Technology

Hampshire
FARNBOROUGH COLLEGE OF TECHNOLOGY
HEAD OF DEPARTMENT OF SCIENCE (Grade IV)
Applicants should have at least a good honours degree, and preferably a higher degree, with sound teaching and administrative experience and active research experience.
Further details from: The Staffing Officer, Farnborough College of Technology, Boundary Road, Farnborough, Hants, GU14 6BB. (S.A.E. please).
Closing date: 25th April, 1983.

Colleges of Further Education

EPSOM SCHOOL OF ART AND DESIGN
DEPARTMENT OF FOUNDATION STUDIES
Lecturer II
The School seeks to appoint a successful designer as a Lecturer Grade II in its large and flourishing Department. The Department offers two courses: the one year Pre-BA Foundation Course and a two year DATEC General Art and Design course. The person appointed will have experience of teaching design and the administration of art and design courses at the non-advanced level, and will be responsible to the Head of Department for the Pre-BA course.
Salary within the scale £7,101-£11,268.
No form: letters of application together with a comprehensive curriculum vitae to be submitted to the Vice Principal, Epsom School of Art and Design, Ashley Road, Epsom, Surrey KT18 5BE within two weeks.
SURREY COUNTY COUNCIL

Plymouth College of Further Education
LECTURER GRADE I
A graduate in Computer Science for 1st Honours Computing (2nd).
Salary: £11,331-£13,880 (fixed term, 3 years, 1st September 1983 to 31st August 1986).
Closing date for applications: 28 April 1983.

Teeside Polytechnic
Department of Mathematics and Statistics
LEA RESEARCH ASSISTANT
The successful candidate will be responsible for the day-to-day running of the accounts department, including the preparation of the annual accounts, and will be expected to register for a higher degree with the Council for National Academic Awards.
Salary: £11,331-£13,880 (fixed term, 3 years, 1st September 1983 to 31st August 1986).
Closing date for applications: 28 April 1983.

Research & Studentships

University of Kent
Canterbury
FACULTY OF SOCIAL SCIENCES
Applications are invited for the post of Research Assistant in the field of Social Sciences. The successful candidate will be expected to register for a higher degree with the Council for National Academic Awards.
Salary: £16,800-£21,130 (fixed term, 3 years, 1st September 1983 to 31st August 1986).
Closing date for applications: 28 April 1983.

Colleges of Higher Education

DIHE
Dorset Institute of Higher Education
Head of Department of Business Studies (Grade VI)
Salary £15,867-£17,480 Ref: BS/TH
Head of Department of Communication and Media (Grade VI)
Salary £15,867-£17,480 Ref: CM/TH
Head of Department of Finance and Law (Grade VI)
Salary £15,867-£17,480 Ref: FL/TH
Head of Department of Tourism, Recreation and Field Sciences (Grade VI)
Salary £14,879-£16,305 Ref: TRFS/TH
The above posts are newly created as a result of a recent review of departmental structure and the retirement of two heads of department.

Principal Lecturer in Information Technology
Ref: IT/TH
Principal Lecturer in Computer Aided Engineering
Ref: CAE/TH
Both of the above posts are offered on a three year contract basis.
Application forms and further details of the above posts are available from the Director (TH1), Dorset Institute of Higher Education, Weymouth Road, Weymouth, Dorset BH12 8BB, (see please) Tel: Bournemouth (0202) 324111, Ext. 389.
The closing date for all posts is Friday, 29th April, 1983.

KING ALFRED'S COLLEGE WINCHESTER

Applications are invited from WELL-QUALIFIED GRADUATES with appropriate and recent experience for the following posts:
1. Primary Education and Rehabilitation
2. Primary Education - Early Years
3. Primary Education - 7-12 years
4. Teacher-Fellow - Multicultural Education (one or two-year appointment)
5. Teacher-Fellow - Children with Special Needs (one or two-year appointment)
6. Communication and Learning Resources (two-year appointment)
7. Computer Programmer (one or two-year appointment)
8. Part-time Lectureship in English (0.5) to teach on B.A. Honours course. Scholarship in the field of Renaissance/seventeenth century and/or nineteenth century studies particularly (one year appointment).
9. Research Assistant, for two years, in seventeenth century history and literature. The Assistant will be required to register for an M.Phil. (CNA A) on an approved inter-disciplinary topic and be supervised by the College; and to teach on this B.A. Honours degree (about one-third). Salary N.J.C. Scale, Research A from £4,680.
Appointments to posts 1-6 and 8 will be made at Lecturer/Senior Lecturer level (£6,855-£12,615) according to qualifications and experience.
Computer Programmer's salary scale: £6,873-£9,231.
Closing date for applications: 29th April, 1983.
For further details:
The Principal, King Alfred's College, Winchester SO22 4NR

Colleges of Higher Education continued

Division of Computing Information Technology
Principal Lecturer Senior Lecturer/Lecturer II Lecturer I/Lecturer I
Additional posts are available due to expansion of courses in Information Technology. Candidates should be graduates (or equivalent) with experience of programming in one or more languages (e.g. PASCAL, COBOL, ASSEMBLER) together with expertise in areas such as Operating Systems, Graphics, Data Processing.
Computing staff teach on a range of industry linked Higher Diploma sandwich courses, part-time BCS courses and specialist short courses. Salaries inclusive of area allowance within the ranges:
• Principal Lecturer £12,162-£15,249
• Senior Lecturer £10,404-£13,047
• Lecturer II £7,086-£11,353
• Lecturer I £5,586-£9,498
(Salaries reviewed)
Send SAE for further details and an application form to be returned within two weeks of the date of this advertisement to The Vice Principal, Slough College of Higher Education, Wellington Street, Slough SL1 1YG. Berkshire is an equal opportunities employer.

WESTMINSTER COLLEGE OXFORD
LECTURER II IN MUSIC AND EDUCATIONAL STUDIES
(Re-advertisement)
Applications are invited from suitably qualified candidates for the above appointment commencing 1st September, 1983. The College is seeking a widely interested and skilled musician to develop the musical life of the College in all its facets. The successful candidate will be responsible for designing and teaching the music courses offered in the Subsidiary Subject programme of the BEd, and the professional courses followed by BEd, (4-year Honours) and PGCE students intending to teach in Junior or Middle schools. It is hoped to appoint a person with commitment to the development of music in the junior school. A contribution will be expected to the College's extensive in-service programme.
The closing date for receipt of applications is the 28th April, 1983.
Further particulars may be obtained from the Principal's Secretary, Westminster College, North Hinksey, Oxford OX2 8AT (Tel: (0865) 247844) to whom all applications together with curriculum vitae, and the names, addresses and telephone numbers of three referees should be sent.

WESTMINSTER COLLEGE OXFORD
LECTURER II IN THEOLOGY AND RELIGIOUS STUDIES
Applications are invited from suitably qualified candidates for the above appointment which will run for a three-year fixed term from 1st September, 1983. The successful applicant will be responsible for teaching in the College's BA (Theology) and BEd programmes, principally in the areas of New Testament Studies, Hermeneutics, and Contemporary Theology. Experience of teaching in school would be an advantage.
Applicants should have good academic qualifications, including a Higher Degree and/or relevant research experience.
Further particulars may be obtained from the Principal's Secretary, Westminster College, North Hinksey, Oxford OX2 8AT (Tel: (0865) 247844) to whom all applications together with curriculum vitae and the names, addresses and telephone numbers of three referees should be sent.
The closing date for receipt of applications is the 28th April, 1983.

DONCASTER METROPOLITAN INSTITUTE OF HIGHER EDUCATION
DEPARTMENT OF DESIGN
LECTURER II IN COMMUNICATION STUDIES
Applications are invited for the above post to commence duties as soon as possible.
The person appointed should possess a degree or professional qualification and will be required to lead and co-ordinate the communication and media studies, and professional practice across a variety of DATEC Graphics and Fashion Design courses. Above all, the person will need a creative approach, enthusiasm, commitment and an ability to fit in with a hard-working teaching team.
Industrial experience would be an asset and a teaching qualification an added advantage.
Salary Scale: Lecturer II £6,885-£11,022.
Placing on the scale is dependent on qualifications and experience.
Please send stamped addressed envelope for particulars and application form to:
Staffing Section
Doncaster Metropolitan Institute of Higher Education
Waterdale, Doncaster DN1 3EX
Closing date 10 days from date of this publication.

DIHE
Head of Department of Accountancy and Business
Grade VI £16,098-£17,721 (Scale under review)
required for September 1983 for this department to be formed by the amalgamation of the departments of Accountancy and of Business Studies and Law, where Heads are both retiring. Full-time, part-time and sandwich courses currently include ACCA (Final), ICMA (Prof 3), BSC HND/C, ICMA and Banking Diploma.
Two further information and application forms sent SAE to The Vice Principal, Slough College of Higher Education, Wellington Street, Slough SL1 1YG. Completed forms must be returned by 29 April 1983.
Berkshire is an equal opportunities employer.

Essex County Council
Chelmer-Essex Institute of Higher Education
SENIOR LECTURERS AND LECTURER GRADE II IN COMPUTER STUDIES
Required for September 1983. The Institute has been selected by the Government as a centre for the provision of Computer Studies at National Diploma level.
Applicants should have appropriate qualifications in the following areas: Systems Analysis, Data Processing, Systems Design, Systems Development, Systems Maintenance, Systems Programming, Systems Testing, Systems Training, Systems Support.
Salary: Senior Lecturer £12,162-£15,249 (fixed term, 3 years, 1st September 1983 to 31st August 1986).
Lecturer Grade II £7,086-£11,353 (fixed term, 3 years, 1st September 1983 to 31st August 1986).
Closing date for applications: 28 April 1983.

County of Avon
Bath College of Higher Education
LECTURER GRADE II IN PRIMARY EDUCATION
Candidates should hold a degree in Education and have good academic qualifications, including a Higher Degree and/or relevant research experience.
Further particulars may be obtained from the Principal's Secretary, Bath College of Higher Education, Bath BA1 1BN (Tel: (01225) 333333) to whom all applications together with curriculum vitae and the names, addresses and telephone numbers of three referees should be sent.
The closing date for receipt of applications is the 28th April, 1983.

Belling College of Higher Education
TWO LECTURERS GRADE I IN SPANISH
The School of Language Studies requires a lecturer with native or near native competence in Spanish to teach Spanish language and literature. The successful candidate will be expected to register for a higher degree with the Council for National Academic Awards.
Salary: £16,800-£21,130 (fixed term, 3 years, 1st September 1983 to 31st August 1986).
Closing date for applications: 28 April 1983.

County of Avon
Bath College of Higher Education
PRINCIPAL LECTURER AND LECTURER GRADE II IN HOME ECONOMICS
Applications are invited for the above posts to commence duties as soon as possible. The person appointed should possess a degree or professional qualification and will be required to lead and co-ordinate the home economics and professional practice across a variety of DATEC Graphics and Fashion Design courses. Above all, the person will need a creative approach, enthusiasm, commitment and an ability to fit in with a hard-working teaching team.
Industrial experience would be an asset and a teaching qualification an added advantage.
Salary Scale: Lecturer II £6,885-£11,022.
Placing on the scale is dependent on qualifications and experience.
Please send stamped addressed envelope for particulars and application form to:
Staffing Section
Doncaster Metropolitan Institute of Higher Education
Waterdale, Doncaster DN1 3EX
Closing date 10 days from date of this publication.

DIHE
DORSET INSTITUTE OF HIGHER EDUCATION
MICROELECTRONICS EDUCATION PROGRAMME
LII/Senior Lecturer in Information Systems
Applications are invited for the above post to commence duties as soon as possible. The person appointed should possess a degree or professional qualification and will be required to lead and co-ordinate the information systems and professional practice across a variety of DATEC Graphics and Fashion Design courses. Above all, the person will need a creative approach, enthusiasm, commitment and an ability to fit in with a hard-working teaching team.
Industrial experience would be an asset and a teaching qualification an added advantage.
Salary Scale: Lecturer II £6,885-£11,022.
Placing on the scale is dependent on qualifications and experience.
Please send stamped addressed envelope for particulars and application form to:
Staffing Section
Doncaster Metropolitan Institute of Higher Education
Waterdale, Doncaster DN1 3EX
Closing date 10 days from date of this publication.

8 Martins College of Higher Education
Lancaster
LECTURER IN PRIMARY SCIENCE EDUCATION
Applications are invited for the above post to commence duties as soon as possible. The person appointed should possess a degree or professional qualification and will be required to lead and co-ordinate the primary science and professional practice across a variety of DATEC Graphics and Fashion Design courses. Above all, the person will need a creative approach, enthusiasm, commitment and an ability to fit in with a hard-working teaching team.
Industrial experience would be an asset and a teaching qualification an added advantage.
Salary Scale: Lecturer II £6,885-£11,022.
Placing on the scale is dependent on qualifications and experience.
Please send stamped addressed envelope for particulars and application form to:
Staffing Section
Doncaster Metropolitan Institute of Higher Education
Waterdale, Doncaster DN1 3EX
Closing date 10 days from date of this publication.

General Vacancies

Wigan New Enterprise Limited
Invite applications for the post of:
DEVELOPMENT ASSISTANT
The post will be of one year duration and the successful applicant will be based at WNEL's Centre for Innovation and Development in Wigan College of Technology.
He/She will be required to assist in the development of microprocessor based systems for WNEL and College clients. There is a possibility that arrangements could be made to meet the requirements of an MSc. research project.
A recent degree, preferably in Electronics, or equivalent, is an essential qualification.
A comprehensive study of microprocessors and particularly control systems during the final degree year, will be a distinct advantage.
Consideration will also be given to relevant industrial experience.
Applications should be made within 14 days of this advertisement to:
Fred W. Bamber,
Project Manager,
Wigan New Enterprise Limited,
11 Bridgeman Terrace,
Wigan,
Lancs, WN1 1BZ.

Technical Colleges

KEIGHLEY
TECHNICAL
COLLEGEAPPOINTMENT
OF PRINCIPAL

Applications are invited for the above post to succeed Mr J. Longden O.B.E. who is retiring at the end of the Summer term 1983.

The college is in Group 5 (salary range, currently £18,657 to £19,811), is situated in the centre of Keighley and is organised into five departments:

- Business & Management Studies.
- Community Education and Staff Development.
- Construction Industries.
- Engineering.
- General Education, Science and Computing.

Further information and application forms can be obtained from the Clerk to the Governors, Keighley Technical College, Cavendish Street, Keighley, BD21 3DF. Completed forms to be returned by 6th May 1983.

City of Bradford Metropolitan Council

We are an equal opportunities employer and welcome applications from candidates of any age, sex, race or disability unless otherwise stated.

DURHAM COUNTY COUNCIL
CONSETT TECHNICAL COLLEGE

(Group 4)

POST OF PRINCIPAL

Applications are invited from persons with suitable qualifications for the post of Principal of Consett Technical College. The college is at present organised in two departments namely, Business and General Studies, and Technology.

The Committee is looking for a person with administrative and organising ability who has broadly based experience in technical and further education.

The college is placed in Group 4 under the Burnham Further Education Committee's Report and the salary attached to the post will be at a fixed point within the range for a Group 4 Principal.

Further details and application forms, returnable by 3rd May, 1983 from the Director of Education, County Hall, Durham DH1 1BU on receipt of a stamped addressed foolscap envelope.

Courses

Oxford Centre for Postgraduate Hebrew Studies
THE OXFORD PROGRAMME
IN YIDDISH

1-26 August 1983

dedicated to the memory of Aaron Yanovsky (1904-1980)

An intensive one-month course in Yiddish language and literature

Courses offered: Yiddish I (elementary), Yiddish II (intermediate), Yiddish III (higher intermediate) and Yiddish IV (advanced). Emphasis on the acquisition and development of active language abilities, accompanied by extensive readings from the works of Yiddish literary masters and an introduction to the history of Yiddish language and literature.

Activities: Afternoon workshops, language laboratory, guest lectures, folk music sessions, pre-World War II Yiddish film and social gatherings. Accreditation: Upon successful completion of the appropriate level course, participants are awarded a Certificate of Completion by the Oxford Centre for Postgraduate Hebrew Studies.

Faculty: Professor Eugene Greenstein, McGill University (Montreal); Dr. David Katz, Oxford Centre for Postgraduate Hebrew Studies; Ms. Ellen Robinson, Columbia University (New York); Mr. Christopher Hudson, Wolfson College (Oxford); Lecturer in Yiddish Folk Music: Dr. Ruth Rubin (New York).

Tuition fee: £150. Full time university students: £100. Enquiries to: JEAN NIGHTINGALE, Administrative Director, The Oxford Programme in Yiddish, Oxford Centre for Postgraduate Hebrew Studies, 45 St. Giles', Oxford OX1 3LW. Tel: Oxford (0865) 511499.

Scholarships

Scholarships and
Training Assistance
GLAMORGAN FURTHER
EDUCATION TRUST FUND

The Mid Glamorgan County Council is the trustee of the Glamorgan Further Education Trust Fund.

The Fund is intended to benefit:

- (i) Pupils who have for not less than two years at any time attended a County Secondary School in the area of the former Administrative County of Glamorgan or Howell's Glamorgan County School, Cardiff, provided that candidates who have attended Howell's Glamorgan County School have been resident for not less than two years while a pupil of the School, in the former Administrative County of Glamorgan.

- (ii) Girl pupils who have for not less than two years at any time attended any maintained Primary School in the Parishes of Llanfisant, Pontypridd, Penarth, Llanfair, Llanelli, Ferndale, Eglwysilan and that part of the Parish of Llanwern comprising the former Ynysybwl Ward of the former Mountain Ash Urban District with a preference for such girls who while in attendance at any such school were resident in the Parish of Eglwysilan.

The Fund is to be applied with the following objects in the case of pupils falling within categories (i) and (ii) above:

- (a) Exhibitions towards any training college for teachers, university or other institution of further (including professional and technical) education, approved by the Council, to be awarded under rules made by the Council, including rules as to the value and period of tenure of the exhibitions, and the qualifications and method of ascertainment and selection of candidates;

and with the following additional objects in the case of pupils falling within category (i) above only:

- (b) Financial assistance, tuition, clothing, tools, instruments or books to enable beneficiaries on leaving school, university or other educational establishment, to prepare for, or to assist their entry into a profession, trade or calling.

Application forms and copies of the rules governing the making of awards may be obtained from a prospective applicant's District Education Office, in the case of prospective applicants from Mid Glamorgan. Prospective applicants from South Glamorgan may apply to the Director of Education, Education Offices, Kingsway, Cardiff, CF1 4JG. Prospective applicants from West Glamorgan may apply to the Director of Education, County Hall, Swansea, SA1 3SN. Postal requests should be marked "Glamorgan Further Education Trust Fund-Forms" and accompanied by a stamped self-addressed envelope.

Applicants should note that the rules provide that awards will not be made in respect of courses for which the applicant will be on paid secondment or will receive a mandatory grant or a grant from the Department of Education and Science or for which an applicant may expect to receive a discretionary grant from the Local Education Authority, unless there are exceptional or unusual circumstances relevant to the application.

The closing date for applications for awards tangible or payable to be made during the academic year 1983-84 and beyond is 31st May, 1983.

K. S. HOPKINS,
Director of Education
County Hall,
Cardiff, CF1 3NF.

Overseas

UNIVERSITY OF CAPE TOWN
Senior Lecturers in
Electrical and
Electronic Engineering

Applications are invited for the above posts for appointment on an ad hoc basis.

Specialisation in (a) power systems or (b) digital and control systems is required, and the successful candidates will be expected to teach at undergraduate and postgraduate level and to undertake research. Appointment will be made according to qualifications and experience on the salary scale R12 537 to R24 045 per annum, in addition a housing allowance of 75% of the salary, a pension fund, medical aid and group life insurance.

Applicants should submit a curriculum vitae stating present salary, research interests and publications, the date duty could be assumed, and the names and addresses of three referees whom the University may approach.

Further information should be obtained either from Miss J. Lloyd, SA Universities Office, Chichester House, 278 High Holborn, London WC1V 7HE, or from the Registrar (Attention: Appointments Office), University of Cape Town, Private Bag, Rondebosch, 7700, South Africa, by whom applications (quoting ref. no. E/334) should be received not later than 31 May 1983.

The University's policy is not to discriminate on the grounds of sex, race or religion.

Further information on the implementation of this policy is obtainable on request.

UNIVERSITY OF CAPE TOWN

Assistant Lectureship
in English

Applications are invited from suitably qualified persons for the above post. Appointment will take effect on 1 July 1983 or as soon as possible thereafter.

There are opportunities in the Department to teach the usual topics in English Language and Literature. Applicants should state their areas of special interest, but should be prepared to teach in a reasonably wide field.

The closing date for applications is 30 April 1983.

Assistant Lectureships in
Romance Studies
(French Language and Literature)

Applications are invited for the above posts vacant from 1 January 1984.

Applicants should possess good academic qualifications in French and be equipped to teach both the language, especially to beginners and first-year students, and a fair knowledge of French literature.

The closing date for applications is 5 May 1983.

Assistant Lectureship in
Romance Studies
(Italian Language and Literature)

Applications are invited for the above post vacant from 1 January 1984.

Applicants should possess good academic qualifications in Italian and be equipped to teach both the language and a fair range of Italian literature.

The closing date for applications is 9 May 1983.

General

The appointments for all the above posts will be made according to qualifications and experience on the salary scale R6 668 to R12 537 to R24 045 per annum, in addition an annual service bonus of nearly one month's salary is payable.

The University offers excellent staff benefits including generous research leave, travel and removal expenses, an attractive housing subsidy subject to State regulations, 75% rebate on tuition fees for dependants, a good pension fund, medical aid and group life insurance.

Applicants should submit a curriculum vitae stating present salary, research interests and publications (if any), the date on which duty could be assumed, and the names and addresses of three referees whom the University may approach.

Further information should be obtained either from Miss J. Lloyd, SA Universities Office, Chichester House, 278 High Holborn, London WC1V 7HE, or from the Registrar (Attention: Appointments Office), University of Cape Town, Private Bag, Rondebosch, 7700, South Africa, by whom applications (quoting ref. no. E/333) should be addressed. Applicants must be submitted in English.

The University's policy is not to discriminate on the grounds of sex, race or religion.

Further information on the implementation of this policy is obtainable on request.

NATIONAL UNIVERSITY OF SINGAPORE
DEPARTMENT OF BUSINESS ADMINISTRATION

Applications are invited for teaching appointments ranging from Lectureships to Associate Professorships in the Department of Business Administration from candidates who must possess a PhD degree. Appointments will be made to fill vacancies in each of the following groups:

- (1) Finance and Economics
- (2) Business Policy
- (3) Marketing and International Business
- (4) Organisational Behaviour
- (5) Decision Sciences

This Department of Business Administration conducts courses to over 1,000 full-time students reading for the Bachelor of Business Administration degree. Selected staff may also participate in the teaching of the Master of Business Administration (MBA) degree course conducted by the School of Management. The department is also active in executive education and consultancy work.

Gross annual emoluments range as follows:

Lecturer	S\$27,510-57,040
Senior Lecturer	S\$51,870-84,600
Associate Professor	S\$74,030-101,970

(SGT21 = S\$3.04 approximately)

The commencing salary will be dependent upon the candidate's qualifications, experience and the level of appointment offered. Leave and medical benefits are provided. Under the University's Academic Staff Provident Fund Scheme, the staff member contributes at the present rate of 23% of his salary subject to a maximum of S\$850 p.m., and the University contributes 22% of his monthly salary. The sum standing to the staff member's credit in the Fund may be withdrawn when the staff member leaves Singapore/Malaysia permanently.

Other benefits include: a housing allowance of S\$1,000 or S\$2,000, subsidised housing at a rental ranging from S\$100 to S\$210 p.m., education allowances in respect of children's education subject to a maximum of S\$12,000 p.a., passage assistance and baggage allowance for the transportation of personal effects to Singapore. Staff members may also undertake consultancy work, subject to University approval, and retain consultation fees up to a maximum of 60% of gross emoluments in any one year.

Application forms and further information on terms and conditions of service may be obtained from:

The Director,
National University of
Singapore,
Kent Ridge,
Singapore 0511.
or
Mr. R. E. Sharma,
Director,
NUS Overseas Office,
5 Cheongnam Street,
London SW1,
England.
(Tel: (01) 236 4582)

Overseas continued

UNIVERSITY OF CAPE TOWN

Lecturer in Music

Applications are invited for appointment as soon as possible to the above post in the South African College of Music.

The successful candidate will be expected to teach Harmony & Counterpoint to first and second year students (thus all students for a B.A. or Diploma course will pass through the successful applicant's classes) and will also be expected to take part in work connected with the College of Music in the primary necessary is, however, in the area of Harmony & Counterpoint.

Applicants should be musicians who have had a varied training in music at tertiary level and there may also be some supervision of postgraduate work.

The successful applicant will be expected to take an active part in the life of the College of Music and if a performer will be expected to do some performing, supervising ensembles, etc. though this is not a prerequisite for appointment.

Appointment, depending on qualifications and experience, will be made on the salary scale R12 537 to R24 045 per annum.

Assistant Lecturers
in Classics

Applications are invited, for the above posts vacant from 1 January 1984.

Experience in teaching Latin to beginners, a knowledge of Legal Latin and/or a special interest in Roman History will be a recommendation. The appointments will be made according to qualifications and experience on the salary scale R9 990 to R21 810 to R37 760 to R42 217 per annum.

General

The University offers excellent staff benefits including an annual service bonus of nearly one month's salary, generous research leave, travel and removal expenses, an attractive housing subsidy subject to State regulations, 75% rebate on tuition fees for dependants, a good pension fund, medical aid and group life insurance. Applicants should submit a curriculum vitae stating present salary, when available if appointed and the names and addresses of three referees. For the post of Lecturer in Music a list of publications in Music (if any), details of experience in performance and composition and any other form of concentration in tertiary studies should be provided. Applications for the post of Assistant Lecturers in Classics should include teaching and other relevant experience, research interests and publications.

Further information should be obtained either from Miss J. Lloyd, SA Universities Office, Chichester House, 278 High Holborn, London WC1V 7HE, or from the Registrar (Attention: Appointments Office), University of Cape Town, Private Bag, Rondebosch, 7700, South Africa, by whom applications (quoting ref. no. E/334) must be received not later than 31 May 1983.

The University's policy is not to discriminate on the grounds of sex, race or religion.

Further information on the implementation of this policy is obtainable on request.

UNIVERSITY OF CAPE TOWN

Associate Professor,
Senior Lecturer and
Lecturer in
Mathematical Statistics

Applications are invited for the above posts for appointment from 1 July 1983 or as soon as possible thereafter.

Preference will be given to applicants whose main interests are either in Mathematical Statistics or Operations Research. The successful candidate will be required to teach at both the undergraduate and postgraduate level and should hold a postgraduate degree in one of the above fields.

Appointments will be made according to qualifications and experience on the following salary scales:

Associate Professor	R21 537 to R36 824 045 to R105 828 110 per annum.
Senior Lecturer	R18 567 to R36 824 045 per annum.
Lecturer	R12 537 to R24 045 to R36 822 173 per annum.

In addition a service bonus of nearly one month's salary is payable annually.

Staff benefits include a 75% remission of tuition fees for dependants or, if preferred, study leave privileges, a housing subsidy scheme subject to State regulations, pension fund, medical aid and group life insurance.

Applicants should submit a curriculum vitae, stating research interests, the publications, experience, present salary, the date duty could be assumed, and the names and addresses of three referees whom the University may approach.

Further information should be obtained either from Miss J. Lloyd, SA Universities Office, Chichester House, 278 High Holborn, London WC1V 7HE, or from the Registrar (Attention: Appointments Office), University of Cape Town, Private Bag, Rondebosch, 7700, South Africa, by whom applications (quoting ref. no. E/334) should be received by 31 May 1983.

The University's policy is not to discriminate on the grounds of sex, race or religion.

Further information on the implementation of this policy is obtainable on request.

UNIVERSITY OF CAPE TOWN

Senior lecturer
in Hebrew

Applications are invited for the above post vacant from 1 January 1984.

The successful candidate must be able to teach Hebrew Bible at all levels and will also be expected to offer courses in other Hebrew subjects. Breadth of experience and competence over and above specialist proficiency in the biblical field will therefore be considered advantageous. In particular, interest in and a knowledge of Jewish history will be welcomed. It will be expected that candidates should be able to teach in Hebrew as well as English.

Appointments will be made according to qualifications and experience on the salary scale R18 567 to R36 824 045 per annum. Applicants should submit a curriculum vitae stating present salary, teaching and other relevant experience, research interests and publications, when available if appointed and the names and addresses of three referees whom the University may approach. The closing date for applications is 15 May 1983.

Lecturer in Drama

Applications are invited for the above post vacant from 1 July 1983.

Applicants should be qualified to teach in areas such as voice and speech training, scene studies, acting techniques and styles, the history, theories and literature of drama and the theatre, the theories and principles of normal speech and verbal communication.

Experience of work in the theatre and of teaching will be a recommendation, as will some knowledge and skill in other performance media. The ability to direct plays with students is essential.

Appointments will be made according to qualifications and experience on the salary scale R12 537 to R24 045 to R36 822 173 per annum.

Applicants should submit a curriculum vitae stating present salary, the date duty could be assumed and the names and addresses of three referees whom the University may approach. The closing date for applications is 28 April 1983.

General

Staff benefits include an annual bonus of nearly one month's salary, generous research leave, travel and removal expenses, a housing subsidy subject to State regulations, a 75% rebate on tuition fees for dependants, pension fund, medical aid and group life insurance.

Further information should be obtained either from Miss J. Lloyd, SA Universities Office, Chichester House, 278 High Holborn, London WC1V 7HE, or from the Registrar (Attention: Appointments Office), University of Cape Town, Private Bag, Rondebosch, 7700, South Africa, by whom applications (quoting ref. no. E/333) should be addressed. Applicants must be submitted in English.

The University's policy is not to discriminate on the grounds of sex, race or religion.

Further information on the implementation of this policy is obtainable on request.

THE HEBREW UNIVERSITY
OF JERUSALEMFaculty of Sciences and Mathematics
DEPARTMENT OF SCIENCE TEACHING

Invites applications for two Faculty positions: one in chemical education, particularly at Secondary School and undergraduate level, and one in the use of computers as learning and teaching aids.

The level of appointment will be according to qualifications and experience, on the regular academic scale (Lecturer, Senior Lecturer, Assistant Professor, Professor). Candidates should write to Prof. E. Mendelsohn, Department of Science Education, The Hebrew University of Jerusalem, 91904 Jerusalem, Israel enclosing a full curriculum vitae, list of publications and names of three referees, before 8th May, 1983.

The Department of Science Teaching in the Faculty of Sciences trains students who already have a B.Sc. degree in one of the sciences, for M.Sc. and Ph.D. degrees in Science Education.

The Department consists of 6 full-time Faculty members and 5 part-time members who devote the rest of their time to research in their own scientific fields. The Department is engaged in research in the fields of mathematical, physical, chemical and biological education, in problems of evaluation, of misconceptions and difficulties of learning scientific concepts experienced by children of families originating in non-European cultures.

DESIGNATED SCHOOLS BOARD
MALAWI

Applications are invited for the post of:

EXECUTIVE SECRETARY
TO THE DESIGNATED
SCHOOLS BOARD

The post entails overall supervision of the administration of the Government, organisation of the appointment of teaching and administrative staff within the Schools and keeping a close working relationship with the Ministry of Education and Culture, and the Headmasters of the five schools administered by the Board.

Applicants should be over 40 years of age and have qualifications and/or experience in at least one of the following fields:

- (a) Education, Educational Administration or related experience.
- (b) Business Administration, i.e. have held a senior post in commerce or managed a business.

A knowledge of accounting would be an advantage but is not essential. Salary will be according to qualifications and experience; appointment on contract includes terminal gratuity and leave pay.

Applications should be addressed to:

The Chairman of the General Purpose Committee,
Designated Schools Board,
P.O. Box 5569, Lilongwe, Malawi.

WUAT

Western Australian
Institute of Technology

Limited Term Appointments

SENIOR TUTOR/LECTURER
PHYSICS
(Several Positions)

Applications are invited for several teaching/research positions within the Department of Applied Physics. Postgraduate qualifications in physics and a commitment to teaching at undergraduate level required. Preference may be given to applicants with professional/teaching experience in radiation physics, image processing and computer-aided instructional techniques. Experience in teaching secondary school physics also an advantage.

Appointees expected to join a current research group, i.e. in meteorology, hydrology, oceanography, environmental remote sensing, seismology, isotope studies, mineralogy or materials science.

Renewable one-year appointment available from 1st July 1983. (Ref 568)

Salary ranges: Lecturer \$22,430 - \$29,487, Senior Tutor \$18,333 - \$22,148.

Limited Term Appointments are available initially for one to three years and to an eventual maximum of five years. Conditions include travel for appointee and family plus assistance with removal expenses.

Appointees: Details including the names and addresses of three referees should be submitted in duplicate not later than 30th April 1983 to the Registrar, Western Australian Institute of Technology, 118 Strand, London WC2R 2AJ, from whom further information may be obtained. When applying please quote Ref No. and Code HES.

UNIVERSITY OF NATAL

DEPARTMENT OF
MICROBIOLOGY AND PLANT
PATHOLOGY

PIETERMARITZBURG

SOUTH AFRICA

Applications are invited from suitably qualified persons regardless of sex, religion, race, colour or national origin, for appointment to the post of

LECTURER IN
MICROBIOLOGY

The minimum qualification required is an M.Sc. degree. A knowledge of, or experience in, industrial applied microbiology will be a strong recommendation.

The salary will be in the range: R12,857-R22,173 per annum. The commencing salary notch will be dependent on the qualifications and experience of the successful applicant. In addition an annual service bonus of 93% of one month's salary is payable, subject to Treasury regulations.

Applicants should submit a curriculum vitae, stating present salary, when available if appointed and the names and addresses of three referees, before 8th May, 1983.

Further information should be obtained either from Miss J. Lloyd, SA Universities Office, Chichester House, 278 High Holborn, London WC1V 7HE, or from the Registrar (Attention: Appointments Office), University of Cape Town, Private Bag, Rondebosch, 7700, South Africa, by whom applications (quoting ref. no. E/334) must be received not later than 31 May 1983.

The University's policy is not to discriminate on the grounds of sex, race or religion.

Further information on the implementation of this policy is obtainable on request.

Applicants should submit a curriculum vitae, stating present salary, when available if appointed and the names and addresses of three referees, before 8th May, 1983.

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